

Historical Control Data in Rats



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¹ Additional HCD endpoints and years are available upon request.

Embryo-Fetal Developmental Historical Control Data

Notes regarding this dataset:

Due to calculation and database constraints, the study count may differ for each data type. This also means that animal count may differ for each data type. All the data that is presented is acceptable for use.

In the Reproductive Data, the total number of viable fetuses may not match the sum of the male and female fetuses. Sometimes, the sex of a fetus is not able to be determined.

Study Date Range: 30 Dec 2016 - 24 Aug 2018

Mean of Study Means

Endpoint	Total	Mean	S.D.	SEM	Median	Min	Max	25th Quartile	75th Quartile
NO. OF DATASETS	31								
Total No. of Animals in the Control Group	745								
No. of Animals That Died	0								
No. of Animals That Aborted	0								
No. of Animals That Delivered	0								
Percent Pregnant		97.81	4.566	0.820	100.00	80.00	100.00	96.00	100.00
No. Gravid	729								
No. With Only Resorptions	0								
No. of Dams With Live Fetuses	729								
No. Nongravid	16								
No. Nongravid That Died	0								
No. of Animals Examined at Laparohysterectomy	745								
Mean Gravid Uterine Weight (g)		99.08	4.121	0.740	98.76	89.95	107.36	97.01	102.73
Mean No. Viable Fetuses/Dam		12.44	0.580	0.104	12.40	11.44	13.72	12.00	12.89
Total No. Viable Fetuses	9068								
Viable Fetuses (%/Litter)		94.60	1.872	0.336	94.59	89.99	97.39	93.99	95.69
Mean No. Postimplantation Loss/Dam		0.70	0.230	0.041	0.72	0.36	1.28	0.54	0.79
Total No. of Postimplantation Losses	508								
Postimplantation Loss (%/Litter)		5.40	1.872	0.336	5.41	2.61	10.01	4.31	6.01
Early Resorptions (%/Litter)		5.21	1.777	0.319	5.33	2.61	10.01	4.28	5.69
Late Resorptions (%/Litter)		0.12	0.247	0.044	0.00	0.00	1.00	0.00	0.12
Dead Fetuses (%/Litter)		0.07	0.303	0.054	0.00	0.00	1.65	0.00	0.00
Mean No. Implantations/Dam		13.14	0.593	0.107	13.08	12.08	14.52	12.75	13.53
Mean No. Corpora Lutea/Dam		13.93	0.621	0.112	13.84	12.67	15.16	13.54	14.32
Mean No. Preimplantation Loss/Dam		0.79	0.288	0.052	0.76	0.32	1.36	0.55	1.00
Total No. Preimplantation Losses	570								
Preimplantation Loss (%/Litter)		5.48	2.011	0.361	5.28	2.12	9.22	3.98	7.02
Total No. Male Fetuses	4560								
Total No. Female Fetuses	4508								
% Males/Litter		50.21	2.949	0.530	50.19	42.21	55.26	48.19	52.41
% Females/Litter		49.79	2.949	0.530	49.81	44.74	57.79	47.59	51.81
Mean Fetal Body Weight (g)		5.992	0.0946	0.0170	5.969	5.817	6.193	5.928	6.044
Mean Male Body Weight (g)		6.146	0.0978	0.0176	6.127	5.955	6.334	6.084	6.196
Mean Female Body Weight (g)		5.834	0.0937	0.0168	5.832	5.653	6.034	5.766	5.889

Developmental Parameters for CrI:CD(SD)
(GD 21, Time-Mated, 50% Vis/Ske, Standard)

ASH_RS_EFD-GD21-TM-50-S_2019.01
18 Jan 2019

Mean of Study Means

NO. OF DATASETS: 31	Fetuses	Litters
Total No. Examined Externally	9068	729
Total No. Examined Viscerally	4530	729
Total No. Examined Skeletally	4549	728

MALFORMATIONS (% Per Litter)	Mean	S.D.	N	SEM	Median	Min	Max	25th Quartile	75th Quartile
TOTAL EXTERNAL MALFORMATIONS	0.34	0.889	31	0.160	0.00	0.00	4.90	0.00	0.38
TOTAL VISCERAL MALFORMATIONS	0.26	0.510	31	0.092	0.00	0.00	2.10	0.00	0.29
TOTAL SKELETAL MALFORMATIONS	0.15	0.329	31	0.059	0.00	0.00	1.33	0.00	0.00
EXTERNAL									
Amelia	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Anal Atresia	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Brachydactyly	0.03	0.163	31	0.029	0.00	0.00	0.91	0.00	0.00
Carpal and/or Tarsal Flexure	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Cleft Palate	0.06	0.199	31	0.036	0.00	0.00	1.00	0.00	0.00
Ectrodactyly	0.04	0.175	31	0.031	0.00	0.00	0.91	0.00	0.00
Fetal Anasarca	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Gastroschisis	0.01	0.069	31	0.012	0.00	0.00	0.38	0.00	0.00
Intestine- Umbilical Herniation	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Localized Fetal Edema	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Macroglossia	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Mandibular Agnathia	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Mandibular Micrognathia	0.03	0.103	31	0.019	0.00	0.00	0.44	0.00	0.00
Maxillary Micrognathia	0.15	0.816	31	0.147	0.00	0.00	4.55	0.00	0.00
Meningoencephalocele	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Microphthalmia and/or Anophthalmia	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Microtia	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Nares Absent	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Omphalocele	0.05	0.155	31	0.028	0.00	0.00	0.67	0.00	0.00
Phocomelia	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Polydactyly	0.01	0.063	31	0.011	0.00	0.00	0.35	0.00	0.00
Snout- Misshapen	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Tail- Bent	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Tail- Curly	0.01	0.051	31	0.009	0.00	0.00	0.29	0.00	0.00
Tail- Filamentous	0.01	0.051	31	0.009	0.00	0.00	0.29	0.00	0.00

Developmental Parameters for Crl:CD(SD)
(GD 21, Time-Mated, 50% Vis/Ske, Standard)

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18 Jan 2019

Mean of Study Means

NO. OF DATASETS: 31	Fetuses	Litters
Total No. Examined Externally	9068	729
Total No. Examined Viscerally	4530	729
Total No. Examined Skeletally	4549	728

MALFORMATIONS (% Per Litter)	Mean	S.D.	N	SEM	Median	Min	Max	25th Quartile	75th Quartile
EXTERNAL									
Tail- Short	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Thoracogastroschisis	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Vertebral Agenesis	0.01	0.072	31	0.013	0.00	0.00	0.40	0.00	0.00
VISCERAL									
Aortic Arch- Retroesophageal	0.06	0.232	31	0.042	0.00	0.00	1.14	0.00	0.00
Aortic Arch- Right-Sided	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Diaphragmatic Hernia	0.07	0.378	31	0.068	0.00	0.00	2.10	0.00	0.00
Hydrocephaly	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Interventricular Septal Defect	0.08	0.281	31	0.050	0.00	0.00	1.33	0.00	0.00
Lung(s)- Lobular Dysgenesis	0.04	0.177	31	0.032	0.00	0.00	0.83	0.00	0.00
Persistent Truncus Arteriosus	0.03	0.150	31	0.027	0.00	0.00	0.83	0.00	0.00
Situs Inversus	0.04	0.153	31	0.028	0.00	0.00	0.67	0.00	0.00
SKELETAL									
Costal Cartilage Anomaly	0.04	0.158	31	0.028	0.00	0.00	0.67	0.00	0.00
Limb Bone(s)- Bent	0.07	0.278	31	0.050	0.00	0.00	1.33	0.00	0.00
Rib Anomaly	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Scapula- Misshapen	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Skull Anomaly	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Sternebra(e)- Fused	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Sternebra(e)- Malaligned (Severe)	0.02	0.103	31	0.018	0.00	0.00	0.57	0.00	0.00
Sternoschisis	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Vertebral Anomaly with or without Associated Rib Anomaly	0.06	0.257	31	0.046	0.00	0.00	1.33	0.00	0.00
Vertebral Centra Anomaly	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00

Mean of Study Means

NO. OF DATASETS: 31	Fetuses	Litters
Total No. Examined Externally	9068	729
Total No. Examined Viscerally	4530	729
Total No. Examined Skeletally	4549	728

VARIATIONS (% Per Litter)	Mean	S.D.	N	SEM	Median	Min	Max	25th Quartile	75th Quartile
TOTAL EXTERNAL VARIATIONS	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
TOTAL VISCERAL VARIATIONS	5.90	4.004	31	0.719	5.32	0.00	16.22	3.19	7.59
TOTAL SKELETAL VARIATIONS	13.73	3.338	31	0.599	13.88	7.55	22.01	11.37	15.23
VISCERAL									
Abdominal Cavity- Contents, Dark Red	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Blood Vessel(s), Major- Variation	0.14	0.366	31	0.066	0.00	0.00	1.24	0.00	0.00
Brachiocephalic Trunk- Short	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Heart- Pale	0.02	0.103	31	0.018	0.00	0.00	0.57	0.00	0.00
Liver- Accessory Lobule(s)	0.77	1.099	31	0.197	0.52	0.00	4.19	0.00	1.02
Liver- Pale	0.02	0.107	31	0.019	0.00	0.00	0.60	0.00	0.00
Liver- Small	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Lung(s)- Small	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Renal Papilla(e) not Developed and/or Distended Ureter(s)	4.98	3.692	31	0.663	4.39	0.00	15.57	2.80	5.95
Spleen- Small	0.03	0.150	31	0.027	0.00	0.00	0.83	0.00	0.00
Thyroid Gland(s)- Small	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Uterus- Narrow	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
SKELETAL									
Extra Site of Ossification- Vertebra(e)	0.09	0.320	31	0.057	0.00	0.00	1.60	0.00	0.00
Hyoid- Unossified	0.08	0.221	31	0.040	0.00	0.00	0.72	0.00	0.00
Ischium- Unossified	0.04	0.239	31	0.043	0.00	0.00	1.33	0.00	0.00
Pubis- Unossified	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Reduced Ossification- 13th Rib(s)	0.68	0.849	31	0.152	0.62	0.00	4.11	0.00	1.17
Reduced Ossification- Skull	0.14	0.354	31	0.064	0.00	0.00	1.32	0.00	0.00
Reduced Ossification- Vertebral Arch(es)	0.07	0.231	31	0.041	0.00	0.00	0.83	0.00	0.00
Rib(s)- 14th Full	0.02	0.135	31	0.024	0.00	0.00	0.75	0.00	0.00
Rib(s)- 14th Rudimentary	8.48	2.666	31	0.479	8.20	4.65	15.27	6.42	9.82
Rib(s)- 7th Cervical	0.99	1.248	31	0.224	0.65	0.00	6.49	0.29	1.25
Rib(s)- Bent	1.29	1.557	31	0.280	0.69	0.00	7.46	0.50	1.58

Developmental Parameters for CrI:CD(SD)
(GD 21, Time-Mated, 50% Vis/Ske, Standard)

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			Mean of Study Means						
NO. OF DATASETS: 31	Fetuses	Litters							
Total No. Examined Externally	9068	729							
Total No. Examined Viscerally	4530	729							
Total No. Examined Skeletally	4549	728							
VARIATIONS (% Per Litter)	Mean	S.D.	N	SEM	Median	Min	Max	25th Quartile	75th Quartile
SKELETAL									
Scapula- Supernumerary Site	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Scapula(e)- Bent	0.02	0.103	31	0.018	0.00	0.00	0.57	0.00	0.00
Skeleton- General Reduced Ossification	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Skull Bone(s)- Accessory	0.21	0.546	31	0.098	0.00	0.00	2.57	0.00	0.00
Skull Bone(s)- Unossified	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Sternebra(e) #1, #2, #3 and/or #4- Unossified	0.07	0.278	31	0.050	0.00	0.00	1.33	0.00	0.00
Sternebra(e) #5 and/or #6- Unossified	0.37	0.449	31	0.081	0.00	0.00	1.33	0.00	0.67
Sternebra(e)- 7th	0.19	0.339	31	0.061	0.00	0.00	1.00	0.00	0.25
Sternebra(e)- Malaligned (Slight or Moderate)	1.36	1.172	31	0.210	1.17	0.00	4.20	0.65	1.87
Sternebra(e)- Thread-like Attachment	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00
Vertebra(e)- 25 Presacral	0.44	0.658	31	0.118	0.00	0.00	2.00	0.00	0.68
Vertebra(e)- 27 Presacral	0.09	0.229	31	0.041	0.00	0.00	0.72	0.00	0.00
Vertebral Centra Not Fully Ossified	0.53	0.647	31	0.116	0.00	0.00	2.06	0.00	0.90
Vertebral Centra Unossified	0.00	0.000	31	0.000	0.00	0.00	0.00	0.00	0.00

Modal Distribution of Fetal Body Weights

Number of Datasets in Historical Control: 31
Range of Study Dates: Dec 2016 - Aug 2018
Number of Dams with Fetal Body Weight Data: 729
Dams with Fetal Body Weight Data with Live Fetuses: 729
Mean Fetal Body Weight Range (g): 5.817 - 6.193

Mean Fetal Body Weight (g)	< 5.7	5.8	5.9	6.0	6.1	6.2	6.3	>= 6.4
Total No. Datasets	0	2	11	11	5	2	0	0
Mean Litter Size	NA	12.119	12.794	12.341	12.336	11.636	NA	NA
Litter Size Range	NA - NA	11.67 - 12.57	12.00 - 13.72	11.44 - 13.00	11.96 - 13.16	11.48 - 11.79	NA - NA	NA - NA

Summary Incidence Malformations and Variations

(Total Number Fetuses/Litters Affected)

Ranked Uppermost to Nethermost

NO. OF DATASETS: 31

	Fetuses	Litters
Total No. Examined Externally	9068	729
Total No. Examined Viscerally	4530	729
Total No. Examined Skeletally	4549	728

MALFORMATIONS	Number	
	Fetuses	Litters
EXTERNAL		
Cleft Palate	5	3
Omphalocele	4	4
Mandibular Micrognathia	2	2
Ectrodactyly	2	2
Brachydactyly	1	1
Maxillary Micrognathia	1	1
Gastroschisis	1	1
Polydactyly	1	1
Tail- Curly	1	1
Tail- Filamentous	1	1
Vertebral Agenesis	1	1
VISCERAL		
Interventricular Septal Defect	4	3
Diaphragmatic Hernia	3	3
Lung(s)- Lobular Dysgenesis	2	2
Aortic Arch- Retroesophageal	2	2
Situs Inversus	2	2
Persistent Truncus Arteriosus	1	1
SKELETAL		
Vertebral Anomaly with or without Associated Rib Anomaly	3	2
Limb Bone(s)- Bent	3	2
Costal Cartilage Anomaly	2	2
Sternebra(e)- Malaligned (Severe)	1	1

Summary Incidence Malformations and Variations

(Total Number Fetuses/Litters Affected)

Ranked Uppermost to Nethermost

NO. OF DATASETS: 31

	Fetuses	Litters
Total No. Examined Externally	9068	729
Total No. Examined Viscerally	4530	729
Total No. Examined Skeletally	4549	728

VARIATIONS	Number	
	Fetuses	Litters
VISCERAL		
Renal Papilla(e) not Developed and/or Distended Ureter(s)	218	129
Liver- Accessory Lobule(s)	34	27
Blood Vessel(s), Major- Variation	7	7
Liver- Pale	1	1
Heart- Pale	1	1
Spleen- Small	1	1
SKELETAL		
Rib(s)- 14th Rudimentary	387	235
Sternebra(e)- Malaligned (Slight or Moderate)	63	56
Rib(s)- Bent	48	39
Rib(s)- 7th Cervical	40	37
Reduced Ossification- 13th Rib(s)	32	27
Vertebral Centra Not Fully Ossified	24	24
Vertebra(e)- 25 Presacral	20	17
Sternebra(e) #5 and/or #6- Unossified	16	15
Skull Bone(s)- Accessory	10	8
Sternebra(e)- 7th	8	8
Reduced Ossification- Skull	6	5
Hyoid- Unossified	4	4
Vertebra(e)- 27 Presacral	4	4
Extra Site of Ossification- Vertebra(e)	4	3
Reduced Ossification- Vertebral Arch(es)	3	3
Sternebra(e) #1, #2, #3 and/or #4- Unossified	3	2
Ischium- Unossified	2	1
Rib(s)- 14th Full	1	1
Scapula(e)- Bent	1	1

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Reproductive Performance

Sex: Male/Female	Species: Rat	Number of Studies/Control Groups: 93 / 96					
Study Type: Fertility	Strain: Crl:CD(SD)	Range of Study Dates: 12/00 - 08/18					
	<u>Total</u>	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Number of Males in Control Group	2249						
Male Mating Index (%)		97.4	3.27	89	90.86 / 100.00	87.59 / 100.00	88.0 / 100.0
Male Fertility Index (%)		94.1	4.93	89	84.24 / 100.00	79.31 / 100.00	80.0 / 100.0
Male Copulation Index (%)		96.6	4.20	79	88.20 / 100.00	84.00 / 100.00	80.0 / 100.0
Number of Females in Control Group	2353						
Female Mating Index (%)		99.3	1.79	95	95.72 / 100.00	93.93 / 100.00	92.0 / 100.0
Female Fertility Index (%)		96.0	4.10	95	87.80 / 100.00	83.70 / 100.00	80.0 / 100.0
Female Conception Index (%)		96.7	3.91	85	88.88 / 100.00	84.97 / 100.00	80.0 / 100.0
Number of Females Selected to Deliver	652						
Number that Delivered	625						
Number that Did Not Deliver	26						
Number that Died Prior to Delivery	2						
Number with Total Litter Loss	0						
Number with Dystocia	0						

N = Count of study means from control groups; NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Reproductive Performance

Sex: Female	Species: Rat			Number of Studies/Control Groups: 91 / 94		
Study Type: Fertility	Strain: Crl:CD(SD)			Range of Study Dates: 12/00 - 08/18		
	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Estrous Cycle Length (days)	4.3	0.29	92	3.72 / 4.88	3.43 / 5.17	3.7 / 6.0
Mean Pre-Coital Interval (days)	2.8	0.47	89	1.86 / 3.74	1.39 / 4.21	1.9 / 3.9
Mean Gestation Length (days)	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean Number of Pups Born	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean Viable Litter Size (PND 0)	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean % Males/ Litter	50.1	1.39	8	47.32 / 52.88	45.93 / 54.27	48.3 / 52.2
Mean % Females/ Litter	49.9	1.39	8	47.12 / 52.68	45.73 / 54.07	47.8 / 51.7
Mean No. of Former Implantation Sites at Weaning	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean No. of Sites Unaccounted for at Weaning	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean Viable Embryos/Dam (GD 15)	14.5	0.74	86	13.02 / 15.98	12.28 / 16.72	11.9 / 16.3
Mean Viable Embryos (%/Litter)	94.7	1.74	86	91.22 / 98.18	89.48 / 99.92	88.8 / 97.6
Mean Viable Fetuses/Dam (GD 20)	14.4	0.48	6	13.44 / 15.36	12.96 / 15.84	13.7 / 14.9
Mean Viable Fetuses (%/Litter)	95.9	1.46	5	92.98 / 98.82	91.52 / 100.00	93.8 / 97.2
Mean Post-Implantation Loss/Dam	0.8	0.23	93	0.34 / 1.26	0.11 / 1.49	0.3 / 1.5
Mean Post-Implantation Loss (%/Litter)	5.2	1.69	93	1.82 / 8.58	0.13 / 10.27	2.4 / 11.2
Mean No. of Corpora Lutea/Dam	16.3	0.79	93	14.72 / 17.88	13.93 / 18.67	13.8 / 18.8
Mean No. of Implantation Sites/Dam	15.2	0.74	93	13.72 / 16.68	12.98 / 17.42	12.6 / 16.9
Mean Pre-Implantation Loss/Dam	1.2	0.45	93	0.30 / 2.10	0.00 / 2.55	0.4 / 2.2
Mean Pre-Implantation Loss (%/Litter)	6.8	2.56	93	1.68 / 11.92	0.00 / 14.48	2.4 / 12.3
Mean Fetal Body Weight (GD 20) (g)	4.0	0.70	7	2.60 / 5.40	1.90 / 6.10	3.6 / 5.6
Males (g)	4.2	0.81	9	2.58 / 5.82	1.77 / 6.63	3.7 / 5.7
Females (g)	4.0	0.75	9	2.50 / 5.50	1.75 / 6.25	3.5 / 5.4
Mean Primordial Follicle Count of 10 Sections/Dam	NA	NA	0	NA / NA	NA / NA	NA / NA

N = Count of study means from control groups; NA = Not applicable

Reproductive Data for Crl:CD(SD) Rats
Fertility

ASH_RS_RE-F_2019.03
05 Mar 2019

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Male and Female Organ Weights (Necropsy)

Sex: Male/Female	Species: Rat	Number of Studies/Control Groups: 89 / 91				
Study Type: Fertility	Strain: Crl:CD(SD)	Range of Study Dates: 12/00 - 08/18				
Males	Mean	S.D.	N	Mean +/- 2 S.D.	Mean +/- 3 S.D.	Min / Max Value
Mean Age of Males at Necropsy (weeks)	17.8	3.01	57	11.78 / 23.82	8.77 / 26.83	13.0 / 29.0
Mean Seminal Vesicle/Coagulating Gland Weight (g)	2.12	0.167	16	1.786 / 2.454	1.619 / 2.621	1.82 / 2.44
Mean Prostate Weight (g)	1.08	0.079	20	0.922 / 1.238	0.843 / 1.317	0.89 / 1.17
Mean Right Testis Weight (g)	1.78	0.056	85	1.668 / 1.892	1.612 / 1.948	1.65 / 1.90
Mean Left Testis Weight (g)	1.78	0.056	85	1.668 / 1.892	1.612 / 1.948	1.65 / 1.92
Mean Right Epididymis Weight (g)	0.71	0.036	85	0.638 / 0.782	0.602 / 0.818	0.57 / 0.80
Mean Left Epididymis Weight (g)	0.67	0.034	85	0.602 / 0.738	0.568 / 0.772	0.55 / 0.78
Mean Right Cauda Epididymis Weight (g)	0.3200	0.02252	84	0.27496 / 0.36504	0.25244 / 0.38756	0.2476 / 0.3899
Mean Left Cauda Epididymis Weight (g)	0.3127	0.02078	84	0.27114 / 0.35426	0.25036 / 0.37504	0.2258 / 0.3706
Mean Brain Weight (g)	2.11	0.052	80	2.006 / 2.214	1.954 / 2.266	1.99 / 2.23
Mean Pituitary Weight (g)	0.015	0.0011	61	0.0128 / 0.0172	0.0117 / 0.0183	0.0125 / 0.0175
Mean Adrenal Weight (g)	0.038	0.0266	4	0.0000 / 0.0912	0.0000 / 0.1178	0.0144 / 0.0637
Females						
Mean Age of Females at Necropsy (weeks)	16.6	1.23	56	14.14 / 19.06	12.91 / 20.29	14.0 / 19.0
Mean Combined Ovary/Oviduct Weight (g)	0.1697	0.00875	57	0.15220 / 0.18720	0.14345 / 0.19595	0.1496 / 0.1946
Mean Combined Ovary w/o Oviduct Weight (g)	0.1631	0.01289	19	0.13732 / 0.18888	0.12443 / 0.20177	0.1319 / 0.1880
Mean Brain Weight (g)	1.91	0.230	72	1.450 / 2.370	1.220 / 2.600	0.02 / 2.05
Mean Pituitary Weight (g)	0.017	0.0014	61	0.0142 / 0.0198	0.0128 / 0.0212	0.0142 / 0.0205
Mean Adrenal Weight (g)	0.052	0.0395	4	0.0000 / 0.1310	0.0000 / 0.1705	0.0174 / 0.0863

N = Count of study means from control groups, NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Sperm Morphology

Sex: Male	Species: Rat			Number of Studies/Control Groups: 83 / 84		
Study Type: Fertility	Strain: Crl:CD(SD)			Range of Study Dates: 12/00 - 08/18		
Sperm Morphology Differential Count (%)	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Normal	99.4	0.48	81	98.44 / 100.00	97.96 / 100.00	97.1 / 100.0
Normal Head Separated from Flagellum	0.3	0.31	81	0.00 / 0.92	0.00 / 1.23	0.0 / 1.8
Head Absent w/ Normal Flagellum	0.2	0.24	81	0.00 / 0.68	0.00 / 0.92	0.0 / 1.4
Head Absent w/ Abnormal Flagellum	0.0	0.00	81	0.00 / 0.00	0.00 / 0.00	0.0 / 0.0
Misshapen Head w/ Normal Flagellum	0.0	0.12	81	0.00 / 0.24	0.00 / 0.36	0.0 / 1.1
Misshapen Head w/ Abnormal Flagellum	0.0	0.01	81	0.00 / 0.02	0.00 / 0.03	0.0 / 0.1
Degenerative Flagellar Defects w/ Normal Head	0.0	0.00	69	0.00 / 0.00	0.00 / 0.00	0.0 / 0.0
Other Flagellar Defects w/ Normal Head	0.0	0.00	78	0.00 / 0.00	0.00 / 0.00	0.0 / 0.0

N = Count of study means from control groups, NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Sperm Concentration (IVOS v. 14)

Sex: Male	Species: Rat			Number of Studies/Control Groups: 42 / 42		
Study Type: Fertility	Strain: Crl:CD(SD)			Range of Study Dates: 06/12 - 08/18		
	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Sperm Concentration (millions/ gram of tissue)						
Left Testis	115.6	12.43	41	90.74 / 140.46	78.31 / 152.89	88.0 / 147.9
Left Epididymis	511.1	47.18	4	416.74 / 605.46	369.56 / 652.64	458.0 / 555.2
Left Cauda Epididymis	740.9	111.70	38	517.50 / 964.30	405.80 / 1076.00	380.9 / 936.7
Mean Sperm Production Rate (millions/ gram of tissue/ day)	18.9	2.15	34	14.60 / 23.20	12.45 / 25.35	14.4 / 24.2
Mean Sperm Motility (%)	82.0	3.62	41	74.76 / 89.24	71.14 / 92.86	74.0 / 89.0
Mean Progressive Sperm Motility (%)	27.0	22.24	8	-17.48 / 71.48	-39.72 / 93.72	17.4 / 82.0

N = Count of study means from control groups, NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Reproductive Performance

Sex: Male/Female	Species: Rat	Number of Studies/Control Groups: 38 / 41					
Study Type: Male Fertility	Strain: Crl:CD(SD)	Range of Study Dates: 07/01 - 01/18					
	<u>Total</u>	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Number of Males in Control Group	961						
Male Mating Index (%)		98.9	2.11	41	94.68 / 100.00	92.57 / 100.00	92.0 / 100.0
Male Fertility Index (%)		95.5	4.27	41	86.96 / 100.00	82.69 / 100.00	84.0 / 100.0
Male Copulation Index (%)		96.8	3.49	37	89.82 / 100.00	86.33 / 100.00	88.0 / 100.0
Number of Females in Control Group	433						
Female Mating Index (%)		98.9	1.98	11	94.94 / 100.00	92.96 / 100.00	95.2 / 100.0
Female Fertility Index (%)		94.2	4.70	11	84.80 / 100.00	80.10 / 100.00	84.0 / 100.0
Female Conception Index (%)		96.0	3.95	13	88.10 / 100.00	84.15 / 100.00	88.0 / 100.0
Number of Females Selected to Deliver	188						
Number that Delivered	176						
Number that Did Not Deliver	12						
Number that Died Prior to Delivery	0						
Number with Total Litter Loss	0						
Number with Dystocia	0						

N = Count of study means from control groups; NA = Not applicable

Reproductive Data for Crl:CD(SD) Rats
Male Fertility

ASH_RS_RE-MF_2019.02
14 Feb 2019

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Reproductive Performance

Sex: Female	Species: Rat			Number of Studies/Control Groups: 39 / 42		
Study Type: Male Fertility	Strain: Crl:CD(SD)			Range of Study Dates: 07/01 - 01/18		
	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Estrous Cycle Length (days)	4.0	0.45	5	3.10 / 4.90	2.65 / 5.35	3.2 / 4.4
Mean Pre-Coital Interval (days)	2.8	0.48	40	1.84 / 3.76	1.36 / 4.24	1.8 / 4.4
Mean Gestation Length (days)	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean Number of Pups Born	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean Viable Litter Size (PND 0)	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean % Males/ Litter	50.6	2.57	13	45.46 / 55.74	42.89 / 58.31	46.0 / 55.2
Mean % Females/ Litter	49.4	2.57	13	44.26 / 54.54	41.69 / 57.11	44.8 / 54.0
Mean No. of Former Implantation Sites at Weaning	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean No. of Sites Unaccounted for at Weaning	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean Viable Embryos/Dam (GD 15)	14.8	0.69	29	13.42 / 16.18	12.73 / 16.87	13.5 / 16.1
Mean Viable Embryos (%/Litter)	94.5	1.59	29	91.32 / 97.68	89.73 / 99.27	89.4 / 97.1
Mean Viable Fetuses/Dam (GD 20)	14.7	0.84	13	13.02 / 16.38	12.18 / 17.22	13.0 / 16.0
Mean Viable Fetuses (%/Litter)	95.3	1.89	11	91.52 / 99.08	89.63 / 100.00	91.9 / 98.5
Mean Post-Implantation Loss/Dam	0.8	0.22	42	0.36 / 1.24	0.14 / 1.46	0.2 / 1.5
Mean Post-Implantation Loss (%/Litter)	5.2	1.70	42	1.80 / 8.60	0.10 / 10.30	1.5 / 10.6
Mean No. of Corpora Lutea/Dam	16.6	0.75	42	15.10 / 18.10	14.35 / 18.85	14.9 / 18.0
Mean No. of Implantation Sites/Dam	15.5	0.70	42	14.10 / 16.90	13.40 / 17.60	14.0 / 16.5
Mean Pre-Implantation Loss/Dam	1.0	0.42	42	0.16 / 1.84	0.00 / 2.26	0.2 / 1.8
Mean Pre-Implantation Loss (%/Litter)	6.1	2.69	42	0.72 / 11.48	0.00 / 14.17	1.2 / 13.8
Mean Fetal Body Weight (GD 20) (g)	3.7	0.05	5	3.60 / 3.80	3.55 / 3.85	3.7 / 3.8
Males (g)	3.8	0.10	13	3.60 / 4.00	3.50 / 4.10	3.6 / 3.9
Females (g)	3.6	0.09	13	3.42 / 3.78	3.33 / 3.87	3.5 / 3.7
Mean Primordial Follicle Count of 10 Sections/Dam	NA	NA	0	NA / NA	NA / NA	NA / NA

N = Count of study means from control groups; NA = Not applicable

Reproductive Data for Crl:CD(SD) Rats
Male Fertility

ASH_RS_RE-MF_2019.02
14 Feb 2019

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Male and Female Organ Weights (Necropsy)

Sex: Male/Female	Species: Rat	Number of Studies/Control Groups: 36 / 39				
Study Type: Male Fertility	Strain: Crl:CD(SD)	Range of Study Dates: 07/01 - 05/17				
Males	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Age of Males at Necropsy (weeks)	19.2	4.74	36	9.72 / 28.68	4.98 / 33.42	13.0 / 35.0
Mean Seminal Vesicle/Coagulating Gland Weight (g)	2.10	0.203	24	1.694 / 2.506	1.491 / 2.709	1.82 / 2.46
Mean Prostate Weight (g)	1.09	0.102	28	0.886 / 1.294	0.784 / 1.396	0.87 / 1.27
Mean Right Testis Weight (g)	1.76	0.054	36	1.652 / 1.868	1.598 / 1.922	1.66 / 1.91
Mean Left Testis Weight (g)	1.75	0.055	37	1.640 / 1.860	1.585 / 1.915	1.66 / 1.89
Mean Right Epididymis Weight (g)	0.70	0.039	36	0.622 / 0.778	0.583 / 0.817	0.63 / 0.78
Mean Left Epididymis Weight (g)	0.67	0.041	36	0.588 / 0.752	0.547 / 0.793	0.59 / 0.76
Mean Right Cauda Epididymis Weight (g)	0.3260	0.02435	35	0.27730 / 0.37470	0.25295 / 0.39905	0.2798 / 0.3806
Mean Left Cauda Epididymis Weight (g)	0.3164	0.02287	36	0.27066 / 0.36214	0.24779 / 0.38501	0.2785 / 0.3532
Mean Brain Weight (g)	2.09	0.044	28	2.002 / 2.178	1.958 / 2.222	2.01 / 2.18
Mean Pituitary Weight (g)	0.015	0.0011	10	0.0128 / 0.0172	0.0117 / 0.0183	0.0124 / 0.0163
Mean Adrenal Weight (g)	NA	NA	0	NA / NA	NA / NA	NA / NA
Females						
Mean Age of Females at Necropsy (weeks)	16.6	0.96	22	14.68 / 18.52	13.72 / 19.48	14.0 / 19.0
Mean Combined Ovary/Oviduct Weight (g)	0.1697	0.00948	2	0.15074 / 0.18866	0.14126 / 0.19814	0.1630 / 0.1764
Mean Combined Ovary w/o Oviduct Weight (g)	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean Brain Weight (g)	1.90	0.007	2	1.886 / 1.914	1.879 / 1.921	1.89 / 1.90
Mean Pituitary Weight (g)	0.016	0.0025	2	0.0110 / 0.0210	0.0085 / 0.0235	0.0145 / 0.0181
Mean Adrenal Weight (g)	NA	NA	0	NA / NA	NA / NA	NA / NA

N = Count of study means from control groups, NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Sperm Morphology

Sex: Male	Species: Rat	Number of Studies/Control Groups: 30 / 31				
Study Type: Male Fertility	Strain: Crl:CD(SD)	Range of Study Dates: 07/01 - 01/18				
Sperm Morphology Differential Count (%)	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Normal	99.4	0.43	28	98.54 / 100.00	98.11 / 100.00	98.2 / 99.9
Normal Head Separated from Flagellum	0.3	0.24	28	0.00 / 0.78	0.00 / 1.02	0.1 / 1.1
Head Absent w/ Normal Flagellum	0.3	0.24	28	0.00 / 0.78	0.00 / 1.02	0.0 / 0.7
Head Absent w/ Abnormal Flagellum	0.0	0.00	28	0.00 / 0.00	0.00 / 0.00	0.0 / 0.0
Misshapen Head w/ Normal Flagellum	0.0	0.06	28	0.00 / 0.12	0.00 / 0.18	0.0 / 0.3
Misshapen Head w/ Abnormal Flagellum	0.0	0.08	28	0.00 / 0.16	0.00 / 0.24	0.0 / 0.4
Degenerative Flagellar Defects w/ Normal Head	0.0	0.00	26	0.00 / 0.00	0.00 / 0.00	0.0 / 0.0
Other Flagellar Defects w/ Normal Head	0.0	0.00	28	0.00 / 0.00	0.00 / 0.00	0.0 / 0.0

N = Count of study means from control groups, NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Sperm Concentration (IVOS v. 14)

Sex: Male	Species: Rat			Number of Studies/Control Groups: 6 / 6		
Study Type: Male Fertility	Strain: Crl:CD(SD)			Range of Study Dates: 09/12 - 01/18		
	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Sperm Concentration (millions/ gram of tissue)						
Left Testis	121.1	14.76	3	91.58 / 150.62	76.82 / 165.38	107.7 / 136.9
Left Epididymis	651.0	NA	1	NA / NA	NA / NA	651.0 / 651.0
Left Cauda Epididymis	787.6	89.22	5	609.16 / 966.04	519.94 / 1055.26	711.4 / 887.9
Mean Sperm Production Rate (millions/ gram of tissue/ day)	20.9	2.19	2	16.52 / 25.28	14.33 / 27.47	19.4 / 22.5
Mean Sperm Motility (%)	85.3	2.42	6	80.46 / 90.14	78.04 / 92.56	82.0 / 89.0
Mean Progressive Sperm Motility (%)	17.7	NA	1	NA / NA	NA / NA	17.7 / 17.7

N = Count of study means from control groups, NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Reproductive Performance

Sex: Male/Female	Species: Rat	Number of Studies/Control Groups: 56 / 56					
Study Type: Female Fertility	Strain: Crl:CD(SD)	Range of Study Dates: 06/01 - 07/18					
	<u>Total</u>	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Number of Females in Control Group	1323						
Female Mating Index (%)		99.3	1.83	56	95.64 / 100.00	93.81 / 100.00	92.0 / 100.0
Female Fertility Index (%)		96.3	4.35	56	87.60 / 100.00	83.25 / 100.00	80.0 / 100.0
Female Conception Index (%)		97.0	4.03	55	88.94 / 100.00	84.91 / 100.00	84.2 / 100.0
Number of Females Selected to Deliver	384						
Number that Delivered	374						
Number that Did Not Deliver	10						
Number that Died Prior to Delivery	1						
Number with Total Litter Loss	0						
Number with Dystocia	0						

N = Count of study means from control groups; NA = Not applicable

Reproductive Data for Crl:CD(SD) Rats
 Female Fertility

ASH_RS_RE-FF_2019.01
 25 Jan 2019

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Reproductive Performance

Sex: Female	Species: Rat			Number of Studies/Control Groups: 60 / 60		
Study Type: Female Fertility	Strain: Crl:CD(SD)			Range of Study Dates: 06/01 - 07/18		
	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Estrous Cycle Length (days)	4.2	0.25	51	3.70 / 4.70	3.45 / 4.95	3.6 / 5.1
Mean Pre-Coital Interval (days)	2.8	0.52	59	1.76 / 3.84	1.24 / 4.36	1.6 / 4.2
Mean Gestation Length (days)	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean Number of Pups Born	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean Viable Litter Size (PND 0)	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean % Males/ Litter	50.9	3.31	32	44.28 / 57.52	40.97 / 60.83	43.9 / 58.5
Mean % Females/ Litter	49.1	3.31	32	42.48 / 55.72	39.17 / 59.03	41.5 / 56.1
Mean No. of Former Implantation Sites at Weaning	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean No. of Sites Unaccounted for at Weaning	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean Viable Embryos/Dam (GD 15)	14.4	0.86	29	12.68 / 16.12	11.82 / 16.98	12.8 / 16.3
Mean Viable Embryos (%/Litter)	95.0	1.23	29	92.54 / 97.46	91.31 / 98.69	91.1 / 97.5
Mean Viable Fetuses/Dam (GD 20)	14.7	0.64	31	13.42 / 15.98	12.78 / 16.62	13.2 / 15.9
Mean Viable Fetuses (%/Litter)	94.4	1.77	19	90.86 / 97.94	89.09 / 99.71	88.8 / 96.7
Mean Post-Implantation Loss/Dam	0.8	0.23	60	0.34 / 1.26	0.11 / 1.49	0.4 / 1.8
Mean Post-Implantation Loss (%/Litter)	5.3	1.53	60	2.24 / 8.36	0.71 / 9.89	2.5 / 11.2
Mean No. of Corpora Lutea/Dam	16.4	0.84	60	14.72 / 18.08	13.88 / 18.92	14.7 / 18.3
Mean No. of Implantation Sites/Dam	15.3	0.81	60	13.68 / 16.92	12.87 / 17.73	13.5 / 17.0
Mean Pre-Implantation Loss/Dam	1.1	0.39	60	0.32 / 1.88	0.00 / 2.27	0.4 / 2.1
Mean Pre-Implantation Loss (%/Litter)	6.3	2.14	60	2.02 / 10.58	0.00 / 12.72	2.4 / 10.8
Mean Fetal Body Weight (GD 20) (g)	3.7	0.18	13	3.34 / 4.06	3.16 / 4.24	3.4 / 4.0
Males (g)	3.8	0.35	30	3.10 / 4.50	2.75 / 4.85	3.5 / 5.4
Females (g)	3.6	0.30	30	3.00 / 4.20	2.70 / 4.50	3.3 / 5.0
Mean Primordial Follicle Count of 10 Sections/Dam	NA	NA	0	NA / NA	NA / NA	NA / NA

N = Count of study means from control groups; NA = Not applicable

Reproductive Data for Crl:CD(SD) Rats
 Female Fertility

ASH_RS_RE-FF_2019.01
 25 Jan 2019

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Male and Female Organ Weights (Necropsy)

Sex: Male/Female	Species: Rat	Number of Studies/Control Groups: 35 / 35				
Study Type: Female Fertility	Strain: Crl:CD(SD)	Range of Study Dates: 06/01 - 12/17				
Females	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Age of Females at Necropsy (weeks)	17.8	1.52	32	14.76 / 20.84	13.24 / 22.36	15.0 / 20.0
Mean Combined Ovary/Oviduct Weight (g)	0.1696	0.01593	6	0.13774 / 0.20146	0.12181 / 0.21739	0.1524 / 0.1995
Mean Combined Ovary w/o Oviduct Weight (g)	0.1615	0.00440	3	0.15270 / 0.17030	0.14830 / 0.17470	0.1570 / 0.1658
Mean Brain Weight (g)	1.92	0.043	8	1.834 / 2.006	1.791 / 2.049	1.86 / 1.99
Mean Pituitary Weight (g)	0.017	0.0007	8	0.0156 / 0.0184	0.0149 / 0.0191	0.0158 / 0.0177
Mean Adrenal Weight (g)	NA	NA	0	NA / NA	NA / NA	NA / NA

N = Count of study means from control groups, NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Reproductive Performance

Sex: Male/Female	Species: Rat	Number of Studies/Control Groups: 63 / 122					
Study Type: Pre-/Post-Natal	Strain: Crl:CD(SD)	Range of Study Dates: 08/00 - 07/18					
	<u>Total</u>	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Number of Males in Control Group	1460						
Male Mating Index (%)		96.1	3.91	61	88.28 / 100.00	84.37 / 100.00	84.0 / 100.0
Male Fertility Index (%)		91.3	6.85	61	77.60 / 100.00	70.75 / 100.00	60.0 / 100.0
Male Copulation Index (%)		94.7	5.81	56	83.08 / 100.00	77.27 / 100.00	71.4 / 100.0
Number of Females in Control Group	2066						
Female Mating Index (%)		98.3	2.72	63	92.86 / 100.00	90.14 / 100.00	91.7 / 100.0
Female Fertility Index (%)		93.5	6.72	78	80.06 / 100.00	73.34 / 100.00	60.0 / 100.0
Female Conception Index (%)		94.5	6.16	57	82.18 / 100.00	76.02 / 100.00	65.2 / 100.0
Number of Females Selected to Deliver	2430						
Number that Delivered	2336						
Number that Did Not Deliver	129						
Number that Died Prior to Delivery	2						
Number with Total Litter Loss	2						
Number with Dystocia	2						

N = Count of study means from control groups; NA = Not applicable

Reproductive Data for Crl:CD(SD) Rats
Pre-/Post-Natal

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Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Reproductive Performance

Sex: Female	Species: Rat			Number of Studies/Control Groups: 64 / 126		
Study Type: Pre-/Post-Natal	Strain: Crl:CD(SD)			Range of Study Dates: 08/00 - 07/18		
	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Estrous Cycle Length (days)	4.3	0.23	62	3.84 / 4.76	3.61 / 4.99	3.7 / 5.0
Mean Pre-Coital Interval (days)	3.1	0.57	61	1.96 / 4.24	1.39 / 4.81	2.2 / 4.8
Mean Gestation Length (days)	21.8	0.15	98	21.50 / 22.10	21.35 / 22.25	21.3 / 22.1
Mean Number of Pups Born	14.5	0.94	99	12.62 / 16.38	11.68 / 17.32	11.8 / 16.6
Mean Viable Litter Size (PND 0)	14.3	0.92	97	12.46 / 16.14	11.54 / 17.06	11.8 / 16.4
Mean % Males/ Litter	49.2	2.87	110	43.46 / 54.94	40.59 / 57.81	41.2 / 55.3
Mean % Females/ Litter	50.8	2.84	109	45.12 / 56.48	42.28 / 59.32	44.7 / 58.8
Mean No. of Former Implantation Sites at Weaning	15.2	1.02	78	13.16 / 17.24	12.14 / 18.26	12.6 / 17.2
Mean No. of Sites Unaccounted for at Weaning	0.9	0.26	76	0.38 / 1.42	0.12 / 1.68	0.4 / 1.5
Mean Viable Embryos/Dam (GD 15)	14.8	0.55	8	13.70 / 15.90	13.15 / 16.45	14.0 / 15.5
Mean Viable Embryos (%/Litter)	94.4	1.73	8	90.94 / 97.86	89.21 / 99.59	92.0 / 96.7
Mean Viable Fetuses/Dam (GD 20)	14.6	0.98	19	12.64 / 16.56	11.66 / 17.54	13.0 / 16.3
Mean Viable Fetuses (%/Litter)	95.0	1.32	19	92.36 / 97.64	91.04 / 98.96	92.5 / 97.2
Mean Post-Implantation Loss/Dam	0.8	0.22	27	0.36 / 1.24	0.14 / 1.46	0.5 / 1.2
Mean Post-Implantation Loss (%/Litter)	5.2	1.44	27	2.32 / 8.08	0.88 / 9.52	2.9 / 8.0
Mean No. of Corpora Lutea/Dam	16.8	1.00	50	14.80 / 18.80	13.80 / 19.80	13.0 / 18.7
Mean No. of Implantation Sites/Dam	15.5	0.80	46	13.90 / 17.10	13.10 / 17.90	13.9 / 17.1
Mean Pre-Implantation Loss/Dam	1.4	0.49	27	0.42 / 2.38	0.00 / 2.87	0.3 / 2.3
Mean Pre-Implantation Loss (%/Litter)	7.9	2.76	27	2.38 / 13.42	0.00 / 16.18	1.8 / 12.5
Mean Fetal Body Weight (GD 20) (g)	3.7	0.59	14	2.52 / 4.88	1.93 / 5.47	3.3 / 5.7
Males (g)	3.8	0.60	14	2.60 / 5.00	2.00 / 5.60	3.3 / 5.8
Females (g)	3.6	0.56	14	2.48 / 4.72	1.92 / 5.28	3.2 / 5.5
Mean Primordial Follicle Count of 10 Sections/Dam	NA	NA	0	NA / NA	NA / NA	NA / NA

N = Count of study means from control groups; NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Pup Survival Indices (%)

Sex: Male/Female	Species: Rat			Number of Studies/Control Groups: 65 / 99		
Study Type: Pre-/Post-Natal	Strain: Crl:CD(SD)			Age Range: 0 - 21 Days		
				Range of Study Dates: 08/00 - 07/18		
	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Number of Pups Born	14.4	1.03	97	12.34 / 16.46	11.31 / 17.49	10.0 / 16.6
Survival (%)						
PND 0 (Relative to No. Born)	98.8	0.93	98	96.94 / 100.00	96.01 / 100.00	96.1 / 100.0
PND 0 to PND 1	99.1	0.86	96	97.38 / 100.00	96.52 / 100.00	95.7 / 100.0
PND 1 to PND 4 (Before Selection)	98.8	1.31	88	96.18 / 100.00	94.87 / 100.00	90.8 / 100.0
PND 4 (After Selection) to PND 7	99.2	1.07	68	97.06 / 100.00	95.99 / 100.00	95.8 / 100.0
PND 7 to PND 14	99.6	0.63	63	98.34 / 100.00	97.71 / 100.00	96.2 / 100.0
PND 14 to PND 21	99.6	0.93	61	97.74 / 100.00	96.81 / 100.00	95.7 / 100.0
PND 21 to PND 28	100.0	NA	1	NA / NA	NA / NA	100.0 / 100.0
Birth to PND 4 (Before Selection)	96.7	2.10	82	92.50 / 100.00	90.40 / 100.00	85.6 / 99.7
PND 4 (After Selection) to PND 21	98.2	2.30	60	93.60 / 100.00	91.30 / 100.00	86.7 / 100.0
PND 4 (After Selection) to PND 28	NA	NA	0	NA / NA	NA / NA	NA / NA

N = Count of study means from control groups; NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Pup Body Weights (g)

Sex: Male/Female		Species: Rat			Number of Studies/Control Groups: 64 / 97		
Study Type: Pre-/Post-Natal		Strain: Crl:CD(SD)		Age Range: 1 - 28 Days		Range of Study Dates: 08/00 - 07/18	
	<u>PND</u>	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Males (g)	PND 0	6.5	0.05	4	6.40 / 6.60	6.35 / 6.65	6.4 / 6.5
	PND 1	7.3	0.39	97	6.52 / 8.08	6.13 / 8.47	6.6 / 8.2
	PND 4	10.1	0.74	89	8.62 / 11.58	7.88 / 12.32	8.7 / 11.7
	PND 7	15.8	1.34	70	13.12 / 18.48	11.78 / 19.82	12.9 / 19.3
	PND 10	22.9	1.79	60	19.32 / 26.48	17.53 / 28.27	18.3 / 27.7
	PND 14	32.4	2.59	64	27.22 / 37.58	24.63 / 40.17	24.6 / 38.7
	PND 17	40.0	2.76	59	34.48 / 45.52	31.72 / 48.28	30.7 / 47.0
	PND 21	52.0	4.67	63	42.66 / 61.34	37.99 / 66.01	37.8 / 62.6
	PND 28	86.5	8.38	10	69.74 / 103.26	61.36 / 111.64	69.8 / 101.3
Females (g)	PND 0	6.1	0.00	4	6.10 / 6.10	6.10 / 6.10	6.1 / 6.1
	PND 1	6.9	0.37	97	6.16 / 7.64	5.79 / 8.01	6.1 / 7.8
	PND 4	9.6	0.73	89	8.14 / 11.06	7.41 / 11.79	8.1 / 11.1
	PND 7	15.0	1.29	70	12.42 / 17.58	11.13 / 18.87	12.1 / 18.5
	PND 10	21.9	1.77	60	18.36 / 25.44	16.59 / 27.21	17.4 / 26.8
	PND 14	31.2	2.54	64	26.12 / 36.28	23.58 / 38.82	24.2 / 37.4
	PND 17	38.5	2.60	59	33.30 / 43.70	30.70 / 46.30	30.0 / 45.2
	PND 21	49.8	4.44	63	40.92 / 58.68	36.48 / 63.12	36.9 / 59.9
	PND 28	80.2	6.59	10	67.02 / 93.38	60.43 / 99.97	67.4 / 91.5

N = Count of study means from control groups; NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Male and Female Organ Weights (Necropsy)

Sex: Male/Female	Species: Rat	Number of Studies/Control Groups: 25 / 39				
Study Type: Pre-/Post-Natal	Strain: Crl:CD(SD)	Range of Study Dates: 08/00 - 06/18				
Males	Mean	S.D.	N	Mean +/- 2 S.D.	Mean +/- 3 S.D.	Min / Max Value
Mean Age of Males at Necropsy (weeks)	17.9	1.55	20	14.80 / 21.00	13.25 / 22.55	15.0 / 21.0
Mean Seminal Vesicle/Coagulating Gland Weight (g)	2.20	0.151	7	1.898 / 2.502	1.747 / 2.653	2.02 / 2.42
Mean Prostate Weight (g)	1.06	0.114	10	0.832 / 1.288	0.718 / 1.402	0.91 / 1.27
Mean Right Testis Weight (g)	1.91	0.053	11	1.804 / 2.016	1.751 / 2.069	1.83 / 2.00
Mean Left Testis Weight (g)	1.88	0.102	11	1.676 / 2.084	1.574 / 2.186	1.74 / 2.11
Mean Right Epididymis Weight (g)	0.73	0.024	11	0.682 / 0.778	0.658 / 0.802	0.70 / 0.78
Mean Left Epididymis Weight (g)	0.69	0.019	11	0.652 / 0.728	0.633 / 0.747	0.66 / 0.72
Mean Right Cauda Epididymis Weight (g)	0.3335	0.01683	9	0.29984 / 0.36716	0.28301 / 0.38399	0.3086 / 0.3564
Mean Left Cauda Epididymis Weight (g)	0.3161	0.01279	9	0.29052 / 0.34168	0.27773 / 0.35447	0.2992 / 0.3308
Mean Brain Weight (g)	2.16	0.062	9	2.036 / 2.284	1.974 / 2.346	2.08 / 2.27
Mean Pituitary Weight (g)	0.017	0.0014	2	0.0142 / 0.0198	0.0128 / 0.0212	0.0156 / 0.0176
Mean Adrenal Weight (g)	NA	NA	0	NA / NA	NA / NA	NA / NA
Females						
Mean Age of Females at Necropsy (weeks)	18.0	1.16	35	15.68 / 20.32	14.52 / 21.48	15.0 / 20.0
Mean Combined Ovary/Oviduct Weight (g)	0.1444	0.00703	4	0.13034 / 0.15846	0.12331 / 0.16549	0.1381 / 0.1545
Mean Combined Ovary w/o Oviduct Weight (g)	0.1400	0.01789	7	0.10422 / 0.17578	0.08633 / 0.19367	0.1266 / 0.1773
Mean Brain Weight (g)	1.98	0.041	9	1.898 / 2.062	1.857 / 2.103	1.92 / 2.05
Mean Pituitary Weight (g)	0.017	0.0013	2	0.0144 / 0.0196	0.0131 / 0.0209	0.0160 / 0.0178
Mean Adrenal Weight (g)	NA	NA	0	NA / NA	NA / NA	NA / NA

N = Count of study means from control groups, NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Developmental Landmarks

Sex: Male/Female	Species: Rat			Number of Studies/Control Groups: 63 / 65		
Study Type: Pre-/Post-Natal	Strain: Crl:CD(SD)			Range of Study Dates: 08/00 - 07/18		
	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Male Anogenital Distance (PND1) (mm)	4.70	NA	1	NA / NA	NA / NA	4.7 / 4.7
Mean Female Anogenital Distance (PND1) (mm)	2.74	NA	1	NA / NA	NA / NA	2.7 / 2.7
Mean Day of Balanopreputal Separation	44.1	1.24	62	41.62 / 46.58	40.38 / 47.82	41.7 / 48.2
Mean Body Weight at Aquisition (g)	239.0	12.67	62	213.66 / 264.34	200.99 / 277.01	202.5 / 273.2
Mean Day of Vaginal Patency	32.7	0.74	62	31.22 / 34.18	30.48 / 34.92	31.1 / 34.9
Mean Body Weight at Aquisition (g)	115.3	6.92	62	101.46 / 129.14	94.54 / 136.06	99.3 / 132.1
Mean Day of Surface Righting Response						
Males	4.1	0.35	2	3.40 / 4.80	3.05 / 5.15	3.8 / 4.3
Females	4.3	0.28	2	3.74 / 4.86	3.46 / 5.14	4.1 / 4.5
Mean Day of Pinnal Detachment						
Males	3.9	NA	1	NA / NA	NA / NA	3.9 / 3.9
Females	3.9	NA	1	NA / NA	NA / NA	3.9 / 3.9
Mean Day of Eye Opening						
Males	14.9	0.57	2	13.76 / 16.04	13.19 / 16.61	14.5 / 15.3
Females	14.8	0.71	2	13.38 / 16.22	12.67 / 16.93	14.3 / 15.3
Mean Day of Air Drop Righting Reflex						
Males	14.9	NA	1	NA / NA	NA / NA	14.9 / 14.9
Females	14.9	NA	1	NA / NA	NA / NA	14.9 / 14.9
Mean Day of Hair Growth						
Males	NA	NA	0	NA / NA	NA / NA	NA / NA
Females	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean Day of Incisor Eruption						
Males	10.6	1.94	3	6.72 / 14.48	4.78 / 16.42	8.9 / 12.7
Females	10.4	1.79	3	6.82 / 13.98	5.03 / 15.77	8.9 / 12.4
Mean Day of Negative Geotaxis						
Males	6.90	0.393	8	6.11 / 7.69	5.72 / 8.08	6.4 / 7.7
Females	7.16	0.400	8	6.36 / 7.96	5.96 / 8.36	6.6 / 7.9

N = Count of study means from control groups, NA = Not applicable

Reproductive Data for Crl:CD(SD) Rats
Pre-/Post-Natal

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Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Sperm Morphology

Sex: Male	Species: Rat	Number of Studies/Control Groups: 9 / 9				
Study Type: Pre-/Post-Natal	Strain: Crl:CD(SD)	Range of Study Dates: 08/04 - 02/17				
Sperm Morphology Differential Count (%)	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Normal	99.4	0.90	9	97.60 / 100.00	96.70 / 100.00	97.8 / 100.0
Normal Head Separated from Flagellum	0.4	0.54	9	0.00 / 1.48	0.00 / 2.02	0.0 / 1.3
Head Absent w/ Normal Flagellum	0.3	0.40	9	0.00 / 1.10	0.00 / 1.50	0.0 / 1.0
Head Absent w/ Abnormal Flagellum	0.0	0.00	9	0.00 / 0.00	0.00 / 0.00	0.0 / 0.0
Misshapen Head w/ Normal Flagellum	0.0	0.00	9	0.00 / 0.00	0.00 / 0.00	0.0 / 0.0
Misshapen Head w/ Abnormal Flagellum	0.0	0.00	9	0.00 / 0.00	0.00 / 0.00	0.0 / 0.0
Degenerative Flagellar Defects w/ Normal Head	0.0	0.00	9	0.00 / 0.00	0.00 / 0.00	0.0 / 0.0
Other Flagellar Defects w/ Normal Head	0.0	0.00	9	0.00 / 0.00	0.00 / 0.00	0.0 / 0.0

N = Count of study means from control groups, NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Sperm Concentration (IVOS v. 14)

Sex: Male	Species: Rat			Number of Studies/Control Groups: 2 / 2		
Study Type: Pre-/Post-Natal	Strain: Crl:CD(SD)			Range of Study Dates: 05/13 - 02/17		
	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Sperm Concentration (millions/ gram of tissue)						
Left Testis	96.1	NA	1	NA / NA	NA / NA	96.1 / 96.1
Left Epididymis	NA	NA	0	NA / NA	NA / NA	NA / NA
Left Cauda Epididymis	740.1	188.59	2	362.92 / 100.00	174.33 / 100.00	606.7 / 873.4
Mean Sperm Production Rate (millions/ gram of tissue/ day)	15.9	NA	1	NA / NA	NA / NA	15.9 / 15.9
Mean Sperm Motility (%)	85.0	7.07	2	70.86 / 99.14	63.79 / 100.00	80.0 / 90.0
Mean Progressive Sperm Motility (%)	NA	NA	0	NA / NA	NA / NA	NA / NA

N = Count of study means from control groups, NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Reproductive Performance

Sex: Male/Female	Species: Rat	Number of Studies/Control Groups: 46 / 87					
Study Type: 1-/2-Gen	Strain: Crl:CD(SD)	Range of Study Dates: 10/00 - 05/17					
	<u>Total</u>	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Number of Males in Control Group	2374						
Male Mating Index (%)		96.2	3.89	84	88.42 / 100.00	84.53 / 100.00	86.7 / 100.0
Male Fertility Index (%)		89.0	7.15	84	74.70 / 100.00	67.55 / 100.00	70.0 / 100.0
Male Copulation Index (%)		93.2	6.16	69	80.88 / 100.00	74.72 / 100.00	70.0 / 100.0
Number of Females in Control Group	2445						
Female Mating Index (%)		96.7	3.62	86	89.46 / 100.00	85.84 / 100.00	86.7 / 100.0
Female Fertility Index (%)		89.3	7.00	86	75.30 / 100.00	68.30 / 100.00	70.0 / 100.0
Female Conception Index (%)		93.1	6.14	68	80.82 / 100.00	74.68 / 100.00	70.0 / 100.0
Number of Females Selected to Deliver	2411						
Number that Delivered	2129						
Number that Did Not Deliver	245						
Number that Died Prior to Delivery	7						
Number with Total Litter Loss	23						
Number with Dystocia	2						

N = Count of study means from control groups; NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Reproductive Performance

Sex: Female	Species: Rat			Number of Studies/Control Groups: 45 / 84		
Study Type: 1-/2-Gen	Strain: Crl:CD(SD)			Range of Study Dates: 10/00 - 05/17		
	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Estrous Cycle Length (days)	4.6	0.67	84	3.26 / 5.94	2.59 / 6.61	3.9 / 7.6
Mean Pre-Coital Interval (days)	3.0	0.54	80	1.92 / 4.08	1.38 / 4.62	1.8 / 4.7
Mean Gestation Length (days)	21.9	0.19	83	21.52 / 22.28	21.33 / 22.47	21.3 / 22.3
Mean Number of Pups Born	13.9	0.80	83	12.30 / 15.50	11.50 / 16.30	11.7 / 15.1
Mean Viable Litter Size (PND 0)	13.6	0.82	81	11.96 / 15.24	11.14 / 16.06	11.6 / 15.0
Mean % Males/ Litter	50.1	2.82	82	44.46 / 55.74	41.64 / 58.56	42.7 / 57.3
Mean % Females/ Litter	50.0	2.70	82	44.60 / 55.40	41.90 / 58.10	43.4 / 57.3
Mean No. of Former Implantation Sites at Weaning	14.7	0.78	76	13.14 / 16.26	12.36 / 17.04	12.6 / 16.0
Mean No. of Sites Unaccounted for at Weaning	0.8	0.29	75	0.22 / 1.38	0.00 / 1.67	0.3 / 1.9
Mean Viable Embryos/Dam (GD 15)	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean Viable Embryos (%/Litter)	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean Viable Fetuses/Dam (GD 20)	15.5	NA	1	NA / NA	NA / NA	15.5 / 15.5
Mean Viable Fetuses (%/Litter)	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean Post-Implantation Loss/Dam	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean Post-Implantation Loss (%/Litter)	6.2	3.46	2	0.00 / 13.12	0.00 / 16.58	3.8 / 8.7
Mean No. of Corpora Lutea/Dam	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean No. of Implantation Sites/Dam	14.4	0.73	11	12.94 / 15.86	12.21 / 16.59	12.6 / 15.3
Mean Pre-Implantation Loss/Dam	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean Pre-Implantation Loss (%/Litter)	NA	NA	0	NA / NA	NA / NA	NA / NA
Mean Fetal Body Weight (GD 20) (g)	3.7	NA	1	NA / NA	NA / NA	3.7 / 3.7
Males (g)	3.8	NA	1	NA / NA	NA / NA	3.8 / 3.8
Females (g)	3.6	NA	1	NA / NA	NA / NA	3.6 / 3.6
Mean Primordial Follicle Count of 10 Sections/Dam	117.2	39.15	33	38.90 / 195.50	0.00 / 234.65	49.8 / 184.4

N = Count of study means from control groups; NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Pup Survival Indices (%)

Sex: Male/Female	Species: Rat			Number of Studies/Control Groups: 46 / 86		
Study Type: 1-/2-Gen	Strain: Crl:CD(SD)		Age Range: 0 - 28 Days	Range of Study Dates: 10/00 - 05/17		
	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Number of Pups Born	13.8	0.79	84	12.22 / 15.38	11.43 / 16.17	11.7 / 15.1
Survival (%)						
PND 0 (Relative to No. Born)	98.0	1.66	86	94.68 / 100.00	93.02 / 100.00	89.8 / 100.0
PND 0 to PND 1	98.7	1.28	86	96.14 / 100.00	94.86 / 100.00	93.4 / 100.0
PND 1 to PND 4 (Before Selection)	98.3	1.95	86	94.40 / 100.00	92.45 / 100.00	87.0 / 100.0
PND 4 (After Selection) to PND 7	99.0	1.27	85	96.46 / 100.00	95.19 / 100.00	93.5 / 100.0
PND 7 to PND 14	99.4	1.07	85	97.26 / 100.00	96.19 / 100.00	93.5 / 100.0
PND 14 to PND 21	99.6	0.82	85	97.96 / 100.00	97.14 / 100.00	94.7 / 100.0
PND 21 to PND 28	99.8	0.28	8	99.24 / 100.00	98.96 / 100.00	99.4 / 100.0
Birth to PND 4 (Before Selection)	95.2	2.85	85	89.50 / 100.00	86.65 / 100.00	83.8 / 98.7
PND 4 (After Selection) to PND 21	98.3	1.86	78	94.58 / 100.00	92.72 / 100.00	91.1 / 100.0
PND 4 (After Selection) to PND 28	97.7	2.15	7	93.40 / 100.00	91.25 / 100.00	94.1 / 99.5

N = Count of study means from control groups; NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Pup Body Weights (g)

Sex: Male/Female		Species: Rat			Number of Studies/Control Groups:		44 / 83
Study Type: 1-/2-Gen		Strain: Crl:CD(SD)		Age Range: 1 - 28 Days		Range of Study Dates: 10/00 - 05/17	
	<u>PND</u>	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Males (g)	PND 1	7.2	0.23	83	6.74 / 7.66	6.51 / 7.89	6.7 / 7.7
	PND 4	10.1	0.64	83	8.82 / 11.38	8.18 / 12.02	6.7 / 11.1
	PND 7	15.6	1.39	82	12.82 / 18.38	11.43 / 19.77	11.9 / 18.3
	PND 11	25.3	3.25	5	18.80 / 31.80	15.55 / 35.05	22.0 / 28.7
	PND 14	31.5	3.60	80	24.30 / 38.70	20.70 / 42.30	20.2 / 38.3
	PND 17	38.0	6.70	4	24.60 / 51.40	17.90 / 58.10	31.9 / 44.0
	PND 21	49.5	5.61	82	38.28 / 60.72	32.67 / 66.33	32.8 / 61.8
	PND 28	77.9	5.45	10	67.00 / 88.80	61.55 / 94.25	69.2 / 88.4
Females (g)	PND 1	6.8	0.23	83	6.34 / 7.26	6.11 / 7.49	6.4 / 7.3
	PND 4	9.5	0.51	83	8.48 / 10.52	7.97 / 11.03	8.5 / 10.5
	PND 7	14.8	1.32	82	12.16 / 17.44	10.84 / 18.76	11.3 / 17.3
	PND 11	24.3	3.38	5	17.54 / 31.06	14.16 / 34.44	20.9 / 28.0
	PND 14	30.3	3.48	80	23.34 / 37.26	19.86 / 40.74	20.3 / 37.0
	PND 17	36.7	6.71	4	23.28 / 50.12	16.57 / 56.83	30.5 / 42.8
	PND 21	47.4	5.27	82	36.86 / 57.94	31.59 / 63.21	32.8 / 59.1
	PND 28	72.2	4.98	10	62.24 / 82.16	57.26 / 87.14	64.3 / 82.4

N = Count of study means from control groups; NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Pup Organ Weights (PND 21)

Sex: Male/Female		Species: Rat			Number of Studies/Control Groups:		35 / 70
Study Type: 1-/2-Gen		Strain: Crl:CD(SD)		Age: 21 Days		Range of Study Dates: 06/01 - 05/17	
		<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Males	Brain (g)	1.4712	0.04629	70	1.37862 / 1.56378	1.33233 / 1.61007	1.3451 / 1.5511
	Spleen (g)	0.2283	0.04095	70	0.14640 / 0.31020	0.10545 / 0.35115	0.1471 / 0.3641
	Thymus (g)	0.2109	0.03358	70	0.14374 / 0.27806	0.11016 / 0.31164	0.1617 / 0.3541
Females	Brain (g)	1.4236	0.04515	70	1.33330 / 1.51390	1.28815 / 1.55905	1.3142 / 1.5129
	Spleen (g)	0.2241	0.03749	70	0.14912 / 0.29908	0.11163 / 0.33657	0.1401 / 0.3099
	Thymus (g)	0.2139	0.03413	70	0.14564 / 0.28216	0.11151 / 0.31629	0.1669 / 0.3483

N = Count of study means from control groups; NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Male and Female Organ Weights (Necropsy)

Sex: Male/Female	Species: Rat	Number of Studies/Control Groups: 47 / 87				
Study Type: 1-/2-Gen	Strain: Crl:CD(SD)	Range of Study Dates: 10/00 - 05/17				
Males	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Age of Males at Necropsy (weeks)	24.4	2.55	71	19.30 / 29.50	16.75 / 32.05	17.0 / 31.0
Mean Seminal Vesicle/Coagulating Gland Weight (g)	2.26	0.141	63	1.978 / 2.542	1.837 / 2.683	1.88 / 2.59
Mean Prostate Weight (g)	1.08	0.088	73	0.904 / 1.256	0.816 / 1.344	0.85 / 1.29
Mean Right Testis Weight (g)	1.83	0.073	71	1.684 / 1.976	1.611 / 2.049	1.67 / 2.05
Mean Left Testis Weight (g)	1.85	0.077	81	1.696 / 2.004	1.619 / 2.081	1.70 / 2.09
Mean Right Epididymis Weight (g)	0.75	0.032	71	0.686 / 0.814	0.654 / 0.846	0.66 / 0.83
Mean Left Epididymis Weight (g)	0.72	0.030	71	0.660 / 0.780	0.630 / 0.810	0.63 / 0.77
Mean Right Cauda Epididymis Weight (g)	0.3412	0.02278	70	0.29564 / 0.38676	0.27286 / 0.40954	0.2801 / 0.3939
Mean Left Cauda Epididymis Weight (g)	0.3328	0.01696	80	0.29888 / 0.36672	0.28192 / 0.38368	0.2866 / 0.3726
Mean Brain Weight (g)	2.15	0.038	69	2.074 / 2.226	2.036 / 2.264	2.06 / 2.23
Mean Pituitary Weight (g)	0.016	0.0013	64	0.0134 / 0.0186	0.0121 / 0.0199	0.0129 / 0.0219
Mean Adrenal Weight (g)	0.061	0.0038	63	0.0534 / 0.0686	0.0496 / 0.0724	0.0528 / 0.0776
Females						
Mean Age of Females at Necropsy (weeks)	24.4	2.41	71	19.58 / 29.22	17.17 / 31.63	17.0 / 31.0
Mean Combined Ovary/Oviduct Weight (g)	0.1309	0.02437	40	0.08216 / 0.17964	0.05779 / 0.20401	0.0991 / 0.1705
Mean Combined Ovary w/o Oviduct Weight (g)	0.1190	0.01038	23	0.09824 / 0.13976	0.08786 / 0.15014	0.0957 / 0.1519
Mean Brain Weight (g)	1.98	0.035	68	1.910 / 2.050	1.875 / 2.085	1.89 / 2.05
Mean Pituitary Weight (g)	0.021	0.0204	64	-0.0198 / 0.0618	-0.0402 / 0.0822	0.0138 / 0.1810
Mean Adrenal Weight (g)	0.086	0.0808	62	-0.0756 / 0.2476	-0.1564 / 0.3284	0.0581 / 0.7110

N = Count of study means from control groups, NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Developmental Landmarks

Sex: Male/Female	Species: Rat	Number of Studies/Control Groups: 37 / 54				
Study Type: 1-/2-Gen	Strain: Crl:CD(SD)	Range of Study Dates: 06/01 - 05/17				
	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Male Anogenital Distance (PND1) (mm)	4.17	0.377	15	3.416 / 4.924	3.039 / 5.301	3.5 / 4.7
Mean Female Anogenital Distance (PND1) (mm)	2.27	0.222	15	1.826 / 2.714	1.604 / 2.936	1.8 / 2.6
Mean Day of Balanopreputial Separation	45.1	1.55	42	42.00 / 48.20	40.45 / 49.75	42.6 / 49.5
Mean Body Weight at Aquisition (g)	232.5	12.98	42	206.54 / 258.46	193.56 / 271.44	203.7 / 265.9
Mean Day of Vaginal Patency	33.4	1.14	42	31.12 / 35.68	29.98 / 36.82	31.2 / 37.0
Mean Body Weight at Aquisition (g)	112.5	6.01	42	100.48 / 124.52	94.47 / 130.53	100.0 / 126.8

N = Count of study means from control groups, NA = Not applicable

Reproductive Data for Crl:CD(SD) Rats
1- & 2-Gen

ASH_RS_RE-G_2018.01
31 Aug 2018

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Sperm Morphology

Sex: Male	Species: Rat	Number of Studies/Control Groups: 46 / 80				
Study Type: 1-/2-Gen	Strain: Crl:CD(SD)	Range of Study Dates: 10/00 - 05/17				
Sperm Morphology Differential Count (%)	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Normal	99.4	0.68	78	98.04 / 100.00	97.36 / 100.00	96.1 / 99.9
Normal Head Separated from Flagellum	0.3	0.26	78	0.00 / 0.82	0.00 / 1.08	0.0 / 1.6
Head Absent w/ Normal Flagellum	0.2	0.31	78	0.00 / 0.82	0.00 / 1.13	0.0 / 2.3
Head Absent w/ Abnormal Flagellum	0.0	0.00	78	0.00 / 0.00	0.00 / 0.00	0.0 / 0.0
Misshapen Head w/ Normal Flagellum	0.0	0.00	78	0.00 / 0.00	0.00 / 0.00	0.0 / 0.0
Misshapen Head w/ Abnormal Flagellum	0.0	0.01	78	0.00 / 0.02	0.00 / 0.03	0.0 / 0.1
Degenerative Flagellar Defects w/ Normal Head	0.0	0.00	78	0.00 / 0.00	0.00 / 0.00	0.0 / 0.0
Other Flagellar Defects w/ Normal Head	0.0	0.00	70	0.00 / 0.00	0.00 / 0.00	0.0 / 0.0

N = Count of study means from control groups, NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Sperm Concentration (IVOS v. 14)

Sex: Male	Species: Rat	Number of Studies/Control Groups: 13 / 20				
Study Type: 1-/2-Gen	Strain: Crl:CD(SD)	Range of Study Dates: 12/11 - 05/17				
	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Sperm Concentration (millions/ gram of tissue)						
Left Testis	114.1	13.86	20	86.38 / 141.82	72.52 / 155.68	77.9 / 131.5
Left Epididymis	497.6	81.72	4	334.16 / 661.04	252.44 / 742.76	395.2 / 592.2
Left Cauda Epididymis	735.3	116.98	16	501.34 / 969.26	384.36 / 1086.24	511.8 / 965.1
Mean Sperm Production Rate (millions/ gram of tissue/ day)	18.7	2.26	20	14.18 / 23.22	11.92 / 25.48	12.8 / 21.6
Mean Sperm Motility (%)	83.4	3.17	20	77.06 / 89.74	73.89 / 92.91	78.0 / 90.0
Mean Progressive Sperm Motility (%)	66.2	6.09	19	54.02 / 78.38	47.93 / 84.47	56.0 / 76.0

N = Count of study means from control groups, NA = Not applicable

Charles River Ashland Historical Control Data
Developmental Neurotoxicity - Learning and Memory - ANY-Maze

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Strain: CRL:CD(SD) RATS **Study Date Range:** Jun 2009 / Jul 2017 **Number of Studies / Control Groups:** 55 / 56

Males - PND 22						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	6.9	1.04	0.18	33	5.2	9.4
Escape Time - A 1	76.6	12.97	2.26	33	56.8	102.0
Escape Time - A 2	56.7	10.68	1.86	33	36.2	79.0
Escape Time - A 3	38.7	10.17	1.77	33	20.4	62.0
Escape Time - A 4	30.9	9.42	1.64	33	15.0	63.2
Escape Time - B 5	139.3	14.52	2.53	33	96.8	159.3
Escape Time - B 6	96.6	16.50	2.87	33	74.2	152.8
Escape Time - B 7	71.7	14.44	2.51	33	45.3	104.9
Escape Time - B 8	54.3	14.52	2.53	33	21.9	85.4
Escape Time - B 9	46.4	13.50	2.35	33	19.8	86.5
Escape Time - B 10	35.2	11.10	1.93	33	14.9	60.4
Escape Time - A 11	56.0	10.32	1.80	33	38.4	78.9
Escape Time - A 12	39.4	7.90	1.38	33	27.0	56.3
Errors - A 1	16.6	2.50	0.62	16	13.0	21.4
Errors - A 2	13.0	2.19	0.55	16	9.5	16.6
Errors - A 3	9.1	3.26	0.81	16	4.0	14.0
Errors - A 4	6.3	2.51	0.63	16	2.7	12.6
Errors - B 5	25.1	2.09	0.52	16	19.2	29.4
Errors - B 6	14.3	3.30	0.82	16	10.1	23.4
Errors - B 7	10.4	2.56	0.64	16	7.1	17.0
Errors - B 8	6.7	2.73	0.68	16	1.9	14.6
Errors - B 9	6.9	2.59	0.65	16	2.0	13.7
Errors - B 10	4.1	1.56	0.39	16	1.1	7.3
Errors - A 11	11.4	2.39	0.60	16	8.0	16.5
Errors - A 12	6.9	1.96	0.49	16	4.0	10.5

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Males - PND 50						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	6.3	0.57	0.40	2	5.9	6.7
Escape Time - A 1	55.6	13.71	9.69	2	45.9	65.3
Escape Time - A 2	42.4	2.49	1.76	2	40.6	44.1
Escape Time - A 3	23.0	3.33	2.35	2	20.6	25.3
Escape Time - A 4	16.9	0.89	0.63	2	16.2	17.5
Escape Time - B 5	135.6	6.83	4.83	2	130.7	140.4
Escape Time - B 6	51.1	1.43	1.01	2	50.1	52.1
Escape Time - B 7	49.6	8.03	5.68	2	44.0	55.3
Escape Time - B 8	39.8	9.69	6.85	2	32.9	46.6
Escape Time - B 9	28.2	4.67	3.31	2	24.9	31.5
Escape Time - B 10	18.3	8.73	6.17	2	12.1	24.5
Escape Time - A 11	42.0	1.10	0.78	2	41.2	42.8
Escape Time - A 12	29.5	14.28	10.10	2	19.4	39.6
Errors - A 1	11.6	2.61	1.84	2	9.8	13.5
Errors - A 2	9.5	2.17	1.53	2	7.9	11.0
Errors - A 3	4.3	0.87	0.62	2	3.7	4.9
Errors - A 4	3.0	0.21	0.15	2	2.8	3.1
Errors - B 5	21.5	2.47	1.75	2	19.7	23.2
Errors - B 6	5.7	1.67	1.18	2	4.5	6.9
Errors - B 7	6.6	0.35	0.25	2	6.3	6.8
Errors - B 8	5.0	0.68	0.48	2	4.5	5.5
Errors - B 9	3.2	1.74	1.23	2	2.0	4.5
Errors - B 10	1.4	0.90	0.63	2	0.8	2.1
Errors - A 11	6.2	0.07	0.05	2	6.1	6.2
Errors - A 12	3.8	2.78	1.97	2	1.8	5.7

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Males - PND 60						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	6.5	N/A	N/A	1	6.5	6.5
Escape Time - A 1	86.9	N/A	N/A	1	86.9	86.9
Escape Time - A 2	48.1	N/A	N/A	1	48.1	48.1
Escape Time - A 3	22.0	N/A	N/A	1	22.0	22.0
Escape Time - A 4	19.7	N/A	N/A	1	19.7	19.7
Escape Time - B 5	156.6	N/A	N/A	1	156.6	156.6
Escape Time - B 6	70.3	N/A	N/A	1	70.3	70.3
Escape Time - B 7	59.6	N/A	N/A	1	59.6	59.6
Escape Time - B 8	31.6	N/A	N/A	1	31.6	31.6
Escape Time - B 9	27.5	N/A	N/A	1	27.5	27.5
Escape Time - B 10	16.1	N/A	N/A	1	16.1	16.1
Escape Time - A 11	62.5	N/A	N/A	1	62.5	62.5
Escape Time - A 12	32.3	N/A	N/A	1	32.3	32.3

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Males - PND 62						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	5.8	0.74	0.12	41	4.7	9.1
Escape Time - A 1	63.6	8.68	1.36	41	43.0	88.1
Escape Time - A 2	45.4	8.42	1.32	41	29.7	68.6
Escape Time - A 3	34.2	10.09	1.58	41	20.1	61.5
Escape Time - A 4	21.9	5.30	0.83	41	15.8	37.9
Escape Time - B 5	131.6	12.27	1.92	41	109.6	153.9
Escape Time - B 6	78.3	15.21	2.37	41	41.0	109.4
Escape Time - B 7	53.5	12.28	1.92	41	30.6	78.1
Escape Time - B 8	35.6	9.85	1.54	41	16.2	59.1
Escape Time - B 9	30.7	9.06	1.41	41	14.7	52.3
Escape Time - B 10	21.8	7.68	1.20	41	10.9	40.7
Escape Time - A 11	61.5	10.61	1.66	41	36.4	85.5
Escape Time - A 12	35.3	7.31	1.14	41	25.5	60.2
Errors - A 1	13.2	1.98	0.43	21	9.9	18.4
Errors - A 2	8.8	1.50	0.33	21	5.7	11.2
Errors - A 3	6.9	1.87	0.41	21	4.1	11.6
Errors - A 4	4.0	1.19	0.26	21	2.5	6.5
Errors - B 5	18.3	2.27	0.49	21	14.4	22.4
Errors - B 6	8.9	1.99	0.43	21	4.2	13.0
Errors - B 7	5.5	1.77	0.39	21	2.9	10.0
Errors - B 8	3.4	1.37	0.30	21	0.8	6.0
Errors - B 9	2.6	0.92	0.20	21	0.7	4.0
Errors - B 10	1.7	0.98	0.21	21	0.3	4.0
Errors - A 11	7.7	1.31	0.28	21	5.3	10.1
Errors - A 12	4.4	1.13	0.25	21	2.9	6.9

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

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Strain: CRL:CD(SD) RATS **Study Date Range:** Jun 2009 / Jul 2017 **Number of Studies / Control Groups:** 55 / 56

Males - PND 63						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	6.4	1.50	1.06	2	5.4	7.5
Escape Time - A 1	68.3	17.92	12.67	2	55.6	81.0
Escape Time - A 2	43.7	3.48	2.46	2	41.3	46.2
Escape Time - A 3	23.4	5.78	4.09	2	19.3	27.4
Escape Time - A 4	19.2	7.66	5.41	2	13.8	24.6
Escape Time - B 5	114.3	20.84	14.74	2	99.6	129.1
Escape Time - B 6	77.9	0.82	0.58	2	77.4	78.5
Escape Time - B 7	61.0	21.29	15.05	2	45.9	76.0
Escape Time - B 8	27.1	19.23	13.60	2	13.5	40.7
Escape Time - B 9	20.3	8.37	5.92	2	14.4	26.2
Escape Time - B 10	21.3	9.10	6.43	2	14.9	27.7
Escape Time - A 11	62.0	20.22	14.30	2	47.7	76.3
Escape Time - A 12	42.2	18.52	13.09	2	29.2	55.3
Errors - A 1	14.7	3.75	2.65	2	12.0	17.3
Errors - A 2	9.9	0.14	0.10	2	9.8	10.0
Errors - A 3	4.9	1.67	1.18	2	3.7	6.1
Errors - A 4	3.6	1.94	1.38	2	2.3	5.0
Errors - B 5	16.1	2.77	1.96	2	14.2	18.1
Errors - B 6	8.9	1.79	1.27	2	7.7	10.2
Errors - B 7	6.9	2.40	1.70	2	5.2	8.6
Errors - B 8	2.3	1.79	1.27	2	1.0	3.5
Errors - B 9	2.0	1.17	0.83	2	1.2	2.8
Errors - B 10	2.0	1.05	0.74	2	1.3	2.7
Errors - A 11	7.6	1.54	1.09	2	6.6	8.7
Errors - A 12	5.4	2.88	2.03	2	3.4	7.5

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Males - PND 70						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	5.3	0.43	0.19	5	4.9	6.0
Escape Time - A 1	68.5	11.67	5.22	5	55.1	84.9
Escape Time - A 2	45.4	6.03	2.70	5	36.3	52.7
Escape Time - A 3	34.7	9.24	4.13	5	22.4	47.4
Escape Time - A 4	24.1	7.11	3.18	5	14.9	34.3
Escape Time - B 5	141.6	14.20	6.35	5	119.8	155.7
Escape Time - B 6	84.1	13.63	6.10	5	65.6	98.8
Escape Time - B 7	63.7	17.66	7.90	5	46.4	89.5
Escape Time - B 8	39.1	9.04	4.04	5	27.0	48.2
Escape Time - B 9	29.5	7.05	3.15	5	19.2	38.0
Escape Time - B 10	22.8	7.57	3.38	5	12.9	30.4
Escape Time - A 11	66.2	8.26	3.70	5	55.6	76.8
Escape Time - A 12	32.4	3.67	1.64	5	28.9	37.6

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Males - PND 76						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	6.8	N/A	N/A	1	6.8	6.8
Escape Time - A 1	65.5	N/A	N/A	1	65.5	65.5
Escape Time - A 2	45.1	N/A	N/A	1	45.1	45.1
Escape Time - A 3	30.6	N/A	N/A	1	30.6	30.6
Escape Time - A 4	15.9	N/A	N/A	1	15.9	15.9
Escape Time - B 5	140.6	N/A	N/A	1	140.6	140.6
Escape Time - B 6	76.3	N/A	N/A	1	76.3	76.3
Escape Time - B 7	30.7	N/A	N/A	1	30.7	30.7
Escape Time - B 8	17.6	N/A	N/A	1	17.6	17.6
Escape Time - B 9	14.8	N/A	N/A	1	14.8	14.8
Escape Time - B 10	12.7	N/A	N/A	1	12.7	12.7
Escape Time - A 11	58.2	N/A	N/A	1	58.2	58.2
Escape Time - A 12	19.4	N/A	N/A	1	19.4	19.4
Errors - A 1	12.7	N/A	N/A	1	12.7	12.7
Errors - A 2	8.4	N/A	N/A	1	8.4	8.4
Errors - A 3	6.9	N/A	N/A	1	6.9	6.9
Errors - A 4	2.5	N/A	N/A	1	2.5	2.5
Errors - B 5	20.6	N/A	N/A	1	20.6	20.6
Errors - B 6	9.8	N/A	N/A	1	9.8	9.8
Errors - B 7	3.5	N/A	N/A	1	3.5	3.5
Errors - B 8	1.7	N/A	N/A	1	1.7	1.7
Errors - B 9	1.7	N/A	N/A	1	1.7	1.7
Errors - B 10	0.8	N/A	N/A	1	0.8	0.8
Errors - A 11	8.4	N/A	N/A	1	8.4	8.4
Errors - A 12	1.5	N/A	N/A	1	1.5	1.5

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

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Strain: CRL:CD(SD) RATS **Study Date Range:** Jun 2009 / Jul 2017 **Number of Studies / Control Groups:** 55 / 56

Males - PND 83						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	5.9	0.22	0.15	2	5.7	6.0
Escape Time - A 1	51.3	1.27	0.90	2	50.4	52.1
Escape Time - A 2	35.2	4.33	3.07	2	32.2	38.3
Escape Time - A 3	33.1	22.76	16.09	2	17.0	49.2
Escape Time - A 4	29.7	0.76	0.54	2	29.2	30.2
Escape Time - B 5	137.9	5.81	4.11	2	133.8	142.0
Escape Time - B 6	67.4	14.85	10.50	2	56.9	77.9
Escape Time - B 7	49.4	15.78	11.16	2	38.3	60.6
Escape Time - B 8	35.9	10.76	7.61	2	28.3	43.5
Escape Time - B 9	29.8	5.79	4.09	2	25.7	33.9
Escape Time - B 10	17.1	0.72	0.51	2	16.6	17.6
Escape Time - A 11	53.2	13.41	9.48	2	43.7	62.7
Escape Time - A 12	28.5	3.95	2.79	2	25.7	31.3
Errors - A 1	11.5	0.04	0.02	2	11.5	11.5
Errors - A 2	6.9	0.60	0.42	2	6.5	7.3
Errors - A 3	6.6	5.52	3.90	2	2.7	10.5
Errors - A 4	5.2	1.13	0.80	2	4.4	6.0
Errors - B 5	16.1	3.36	2.38	2	13.7	18.5
Errors - B 6	6.1	1.20	0.85	2	5.2	6.9
Errors - B 7	4.4	0.53	0.38	2	4.0	4.8
Errors - B 8	3.3	0.67	0.48	2	2.8	3.8
Errors - B 9	3.2	0.35	0.25	2	2.9	3.4
Errors - B 10	1.5	0.39	0.28	2	1.3	1.8
Errors - A 11	7.6	0.95	0.68	2	7.0	8.3
Errors - A 12	3.7	0.64	0.45	2	3.3	4.2

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Strain: CRL:CD(SD) RATS **Study Date Range:** Jun 2009 / Jul 2017 **Number of Studies / Control Groups:** 55 / 56

Males - PND 87						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	5.4	0.77	0.54	2	4.8	5.9
Escape Time - A 1	72.2	13.40	9.47	2	62.7	81.7
Escape Time - A 2	41.9	10.02	7.09	2	34.9	49.0
Escape Time - A 3	43.8	3.83	2.70	2	41.1	46.5
Escape Time - A 4	24.3	2.30	1.63	2	22.6	25.9
Escape Time - B 5	123.9	4.78	3.38	2	120.6	127.3
Escape Time - B 6	59.2	8.45	5.97	2	53.2	65.2
Escape Time - B 7	52.6	9.77	6.91	2	45.7	59.5
Escape Time - B 8	31.7	2.98	2.11	2	29.6	33.8
Escape Time - B 9	34.2	5.94	4.20	2	30.0	38.4
Escape Time - B 10	24.9	12.66	8.95	2	15.9	33.8
Escape Time - A 11	69.0	25.75	18.21	2	50.8	87.2
Escape Time - A 12	27.2	1.57	1.11	2	26.1	28.3
Errors - A 1	15.7	N/A	N/A	1	15.7	15.7
Errors - A 2	13.4	N/A	N/A	1	13.4	13.4
Errors - A 3	11.0	N/A	N/A	1	11.0	11.0
Errors - A 4	4.5	N/A	N/A	1	4.5	4.5
Errors - B 5	17.3	N/A	N/A	1	17.3	17.3
Errors - B 6	7.3	N/A	N/A	1	7.3	7.3
Errors - B 7	7.3	N/A	N/A	1	7.3	7.3
Errors - B 8	4.0	N/A	N/A	1	4.0	4.0
Errors - B 9	4.1	N/A	N/A	1	4.1	4.1
Errors - B 10	3.5	N/A	N/A	1	3.5	3.5
Errors - A 11	13.5	N/A	N/A	1	13.5	13.5
Errors - A 12	4.0	N/A	N/A	1	4.0	4.0

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Males - PND 90						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	5.9	N/A	N/A	1	5.9	5.9
Escape Time - A 1	61.3	N/A	N/A	1	61.3	61.3
Escape Time - A 2	41.7	N/A	N/A	1	41.7	41.7
Escape Time - A 3	22.3	N/A	N/A	1	22.3	22.3
Escape Time - A 4	14.9	N/A	N/A	1	14.9	14.9
Escape Time - B 5	128.2	N/A	N/A	1	128.2	128.2
Escape Time - B 6	72.9	N/A	N/A	1	72.9	72.9
Escape Time - B 7	51.8	N/A	N/A	1	51.8	51.8
Escape Time - B 8	24.0	N/A	N/A	1	24.0	24.0
Escape Time - B 9	19.3	N/A	N/A	1	19.3	19.3
Escape Time - B 10	11.1	N/A	N/A	1	11.1	11.1
Escape Time - A 11	42.5	N/A	N/A	1	42.5	42.5
Escape Time - A 12	28.4	N/A	N/A	1	28.4	28.4
Errors - A 1	12.0	N/A	N/A	1	12.0	12.0
Errors - A 2	9.1	N/A	N/A	1	9.1	9.1
Errors - A 3	4.7	N/A	N/A	1	4.7	4.7
Errors - A 4	3.8	N/A	N/A	1	3.8	3.8
Errors - B 5	17.0	N/A	N/A	1	17.0	17.0
Errors - B 6	8.2	N/A	N/A	1	8.2	8.2
Errors - B 7	4.1	N/A	N/A	1	4.1	4.1
Errors - B 8	1.1	N/A	N/A	1	1.1	1.1
Errors - B 9	1.3	N/A	N/A	1	1.3	1.3
Errors - B 10	0.7	N/A	N/A	1	0.7	0.7
Errors - A 11	5.5	N/A	N/A	1	5.5	5.5
Errors - A 12	3.1	N/A	N/A	1	3.1	3.1

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Males - PND 99						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	5.6	N/A	N/A	1	5.6	5.6
Escape Time - A 1	54.4	N/A	N/A	1	54.4	54.4
Escape Time - A 2	53.7	N/A	N/A	1	53.7	53.7
Escape Time - A 3	26.3	N/A	N/A	1	26.3	26.3
Escape Time - A 4	11.5	N/A	N/A	1	11.5	11.5
Escape Time - B 5	65.3	N/A	N/A	1	65.3	65.3
Escape Time - B 6	34.3	N/A	N/A	1	34.3	34.3
Escape Time - B 7	42.2	N/A	N/A	1	42.2	42.2
Escape Time - B 8	10.2	N/A	N/A	1	10.2	10.2
Escape Time - B 9	12.4	N/A	N/A	1	12.4	12.4
Escape Time - B 10	9.0	N/A	N/A	1	9.0	9.0
Escape Time - A 11	37.4	N/A	N/A	1	37.4	37.4
Escape Time - A 12	11.2	N/A	N/A	1	11.2	11.2
Errors - A 1	9.4	N/A	N/A	1	9.4	9.4
Errors - A 2	10.4	N/A	N/A	1	10.4	10.4
Errors - A 3	5.4	N/A	N/A	1	5.4	5.4
Errors - A 4	1.5	N/A	N/A	1	1.5	1.5
Errors - B 5	8.2	N/A	N/A	1	8.2	8.2
Errors - B 6	3.9	N/A	N/A	1	3.9	3.9
Errors - B 7	4.9	N/A	N/A	1	4.9	4.9
Errors - B 8	0.3	N/A	N/A	1	0.3	0.3
Errors - B 9	0.5	N/A	N/A	1	0.5	0.5
Errors - B 10	0.2	N/A	N/A	1	0.2	0.2
Errors - A 11	4.7	N/A	N/A	1	4.7	4.7
Errors - A 12	0.8	N/A	N/A	1	0.8	0.8

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Males - PND 106						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	8.7	N/A	N/A	1	8.7	8.7
Escape Time - A 1	58.1	N/A	N/A	1	58.1	58.1
Escape Time - A 2	54.1	N/A	N/A	1	54.1	54.1
Escape Time - A 3	36.0	N/A	N/A	1	36.0	36.0
Escape Time - A 4	27.1	N/A	N/A	1	27.1	27.1
Escape Time - B 5	116.1	N/A	N/A	1	116.1	116.1
Escape Time - B 6	46.0	N/A	N/A	1	46.0	46.0
Escape Time - B 7	39.8	N/A	N/A	1	39.8	39.8
Escape Time - B 8	30.2	N/A	N/A	1	30.2	30.2
Escape Time - B 9	30.2	N/A	N/A	1	30.2	30.2
Escape Time - B 10	21.2	N/A	N/A	1	21.2	21.2
Escape Time - A 11	86.1	N/A	N/A	1	86.1	86.1
Escape Time - A 12	45.6	N/A	N/A	1	45.6	45.6

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Males - PND 108						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	6.5	1.29	0.75	3	5.4	7.9
Escape Time - A 1	65.4	11.78	6.80	3	52.2	74.9
Escape Time - A 2	39.0	8.14	4.70	3	30.1	46.0
Escape Time - A 3	37.1	10.90	6.29	3	25.7	47.5
Escape Time - A 4	24.6	9.95	5.74	3	16.3	35.6
Escape Time - B 5	132.8	19.00	10.97	3	114.3	152.3
Escape Time - B 6	77.8	7.26	4.19	3	71.6	85.8
Escape Time - B 7	58.7	5.35	3.09	3	52.5	61.9
Escape Time - B 8	30.0	6.80	3.93	3	25.7	37.9
Escape Time - B 9	27.9	11.85	6.84	3	20.1	41.5
Escape Time - B 10	21.8	6.66	3.85	3	16.3	29.2
Escape Time - A 11	73.7	17.16	9.91	3	58.2	92.2
Escape Time - A 12	37.5	12.19	7.04	3	26.0	50.3
Errors - A 1	12.4	2.14	1.23	3	10.5	14.8
Errors - A 2	7.2	1.64	0.95	3	5.4	8.6
Errors - A 3	7.0	2.08	1.20	3	5.0	9.2
Errors - A 4	4.3	1.85	1.07	3	2.3	6.0
Errors - B 5	14.6	3.87	2.24	3	12.3	19.1
Errors - B 6	6.5	1.19	0.69	3	5.2	7.3
Errors - B 7	5.8	2.28	1.31	3	3.7	8.2
Errors - B 8	2.9	0.93	0.54	3	2.3	4.0
Errors - B 9	2.8	1.65	0.95	3	1.8	4.8
Errors - B 10	2.2	0.84	0.49	3	1.4	3.1
Errors - A 11	9.5	4.17	2.40	3	7.1	14.3
Errors - A 12	4.9	1.64	0.95	3	3.0	5.9

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Males - PND 121						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	4.5	N/A	N/A	1	4.5	4.5
Escape Time - A 1	60.2	N/A	N/A	1	60.2	60.2
Escape Time - A 2	41.7	N/A	N/A	1	41.7	41.7
Escape Time - A 3	36.3	N/A	N/A	1	36.3	36.3
Escape Time - A 4	16.4	N/A	N/A	1	16.4	16.4
Escape Time - B 5	131.6	N/A	N/A	1	131.6	131.6
Escape Time - B 6	45.2	N/A	N/A	1	45.2	45.2
Escape Time - B 7	38.6	N/A	N/A	1	38.6	38.6
Escape Time - B 8	9.7	N/A	N/A	1	9.7	9.7
Escape Time - B 9	19.7	N/A	N/A	1	19.7	19.7
Escape Time - B 10	12.1	N/A	N/A	1	12.1	12.1
Escape Time - A 11	62.3	N/A	N/A	1	62.3	62.3
Escape Time - A 12	55.6	N/A	N/A	1	55.6	55.6
Errors - A 1	13.3	N/A	N/A	1	13.3	13.3
Errors - A 2	11.0	N/A	N/A	1	11.0	11.0
Errors - A 3	8.9	N/A	N/A	1	8.9	8.9
Errors - A 4	4.4	N/A	N/A	1	4.4	4.4
Errors - B 5	14.7	N/A	N/A	1	14.7	14.7
Errors - B 6	4.9	N/A	N/A	1	4.9	4.9
Errors - B 7	3.1	N/A	N/A	1	3.1	3.1
Errors - B 8	0.9	N/A	N/A	1	0.9	0.9
Errors - B 9	2.6	N/A	N/A	1	2.6	2.6
Errors - B 10	1.2	N/A	N/A	1	1.2	1.2
Errors - A 11	7.2	N/A	N/A	1	7.2	7.2
Errors - A 12	6.2	N/A	N/A	1	6.2	6.2

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Males - PND 173						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	7.1	0.82	0.58	2	6.5	7.7
Escape Time - A 1	65.3	11.29	7.99	2	57.3	73.3
Escape Time - A 2	50.9	1.80	1.28	2	49.6	52.2
Escape Time - A 3	30.3	6.89	4.88	2	25.4	35.2
Escape Time - A 4	24.8	8.44	5.97	2	18.8	30.8
Escape Time - B 5	157.5	8.44	5.97	2	151.5	163.4
Escape Time - B 6	93.2	1.15	0.81	2	92.4	94.1
Escape Time - B 7	69.1	17.74	12.55	2	56.6	81.7
Escape Time - B 8	30.7	5.56	3.93	2	26.8	34.6
Escape Time - B 9	22.6	10.22	7.23	2	15.4	29.8
Escape Time - B 10	21.2	14.47	10.24	2	10.9	31.4
Escape Time - A 11	82.8	3.63	2.57	2	80.2	85.3
Escape Time - A 12	55.9	13.60	9.62	2	46.3	65.5
Errors - A 1	10.7	2.62	1.85	2	8.8	12.5
Errors - A 2	7.3	1.13	0.80	2	6.5	8.1
Errors - A 3	5.1	1.63	1.15	2	3.9	6.2
Errors - A 4	2.8	0.49	0.35	2	2.4	3.1
Errors - B 5	12.9	0.71	0.50	2	12.4	13.4
Errors - B 6	7.5	1.20	0.85	2	6.6	8.3
Errors - B 7	5.3	2.47	1.75	2	3.5	7.0
Errors - B 8	1.9	0.85	0.60	2	1.3	2.5
Errors - B 9	1.7	1.63	1.15	2	0.5	2.8
Errors - B 10	2.1	2.47	1.75	2	0.3	3.8
Errors - A 11	8.4	2.97	2.10	2	6.3	10.5
Errors - A 12	4.5	2.55	1.80	2	2.7	6.3

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Females - PND 22						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	6.7	0.96	0.17	33	5.3	9.1
Escape Time - A 1	74.0	10.90	1.90	33	47.5	94.8
Escape Time - A 2	56.4	11.66	2.03	33	35.3	81.6
Escape Time - A 3	40.8	9.53	1.66	33	26.7	74.8
Escape Time - A 4	31.3	7.27	1.27	33	17.0	48.3
Escape Time - B 5	136.3	11.81	2.06	33	106.8	159.6
Escape Time - B 6	94.7	16.16	2.81	33	50.1	123.5
Escape Time - B 7	74.0	15.61	2.72	33	41.4	110.6
Escape Time - B 8	55.1	12.04	2.10	33	29.4	87.1
Escape Time - B 9	48.1	14.10	2.45	33	18.7	79.8
Escape Time - B 10	38.4	14.15	2.46	33	12.9	71.2
Escape Time - A 11	56.3	8.43	1.47	33	37.1	73.0
Escape Time - A 12	39.0	9.09	1.58	33	19.0	55.1
Errors - A 1	17.4	1.89	0.47	16	14.1	20.0
Errors - A 2	12.2	3.17	0.79	16	7.8	18.5
Errors - A 3	10.3	3.14	0.79	16	6.3	17.3
Errors - A 4	6.0	2.05	0.51	16	3.3	11.1
Errors - B 5	25.5	2.45	0.61	16	22.0	31.7
Errors - B 6	14.6	3.25	0.81	16	8.1	19.1
Errors - B 7	11.3	2.42	0.61	16	6.1	16.1
Errors - B 8	7.2	1.98	0.50	16	3.1	11.4
Errors - B 9	7.2	2.33	0.58	16	2.9	10.4
Errors - B 10	4.6	1.59	0.40	16	1.2	7.9
Errors - A 11	11.9	1.98	0.49	16	8.3	15.4
Errors - A 12	6.6	1.74	0.43	16	3.5	9.6

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Females - PND 50						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	6.3	0.27	0.19	2	6.2	6.5
Escape Time - A 1	75.7	0.96	0.68	2	75.0	76.3
Escape Time - A 2	42.7	6.44	4.55	2	38.1	47.2
Escape Time - A 3	33.7	7.27	5.14	2	28.5	38.8
Escape Time - A 4	22.8	5.72	4.05	2	18.7	26.8
Escape Time - B 5	104.1	35.46	25.07	2	79.0	129.2
Escape Time - B 6	82.8	20.96	14.82	2	68.0	97.6
Escape Time - B 7	58.0	10.68	7.56	2	50.5	65.6
Escape Time - B 8	27.8	8.72	6.17	2	21.6	33.9
Escape Time - B 9	30.4	11.70	8.28	2	22.2	38.7
Escape Time - B 10	28.6	5.87	4.15	2	24.5	32.8
Escape Time - A 11	43.7	0.22	0.16	2	43.6	43.9
Escape Time - A 12	34.9	2.37	1.68	2	33.2	36.6
Errors - A 1	15.7	0.78	0.55	2	15.1	16.2
Errors - A 2	8.4	1.41	1.00	2	7.4	9.4
Errors - A 3	6.8	1.98	1.40	2	5.4	8.2
Errors - A 4	4.3	1.51	1.07	2	3.2	5.3
Errors - B 5	19.5	8.18	5.78	2	13.7	25.3
Errors - B 6	13.6	1.86	1.32	2	12.3	14.9
Errors - B 7	7.5	0.38	0.27	2	7.2	7.7
Errors - B 8	3.2	1.50	1.06	2	2.1	4.2
Errors - B 9	3.2	2.22	1.57	2	1.6	4.7
Errors - B 10	2.8	1.08	0.77	2	2.0	3.5
Errors - A 11	6.7	1.23	0.87	2	5.8	7.5
Errors - A 12	4.2	0.92	0.65	2	3.5	4.8

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Females - PND 60						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	7.2	N/A	N/A	1	7.2	7.2
Escape Time - A 1	71.0	N/A	N/A	1	71.0	71.0
Escape Time - A 2	55.2	N/A	N/A	1	55.2	55.2
Escape Time - A 3	38.8	N/A	N/A	1	38.8	38.8
Escape Time - A 4	22.5	N/A	N/A	1	22.5	22.5
Escape Time - B 5	130.6	N/A	N/A	1	130.6	130.6
Escape Time - B 6	76.9	N/A	N/A	1	76.9	76.9
Escape Time - B 7	51.6	N/A	N/A	1	51.6	51.6
Escape Time - B 8	25.1	N/A	N/A	1	25.1	25.1
Escape Time - B 9	33.4	N/A	N/A	1	33.4	33.4
Escape Time - B 10	23.5	N/A	N/A	1	23.5	23.5
Escape Time - A 11	73.8	N/A	N/A	1	73.8	73.8
Escape Time - A 12	37.0	N/A	N/A	1	37.0	37.0

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Females - PND 62						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	6.3	0.63	0.10	41	5.2	7.9
Escape Time - A 1	63.8	9.19	1.44	41	49.6	85.3
Escape Time - A 2	47.1	6.61	1.03	41	36.4	59.5
Escape Time - A 3	32.9	5.73	0.89	41	22.0	47.5
Escape Time - A 4	25.5	5.33	0.83	41	17.6	37.9
Escape Time - B 5	117.8	14.84	2.32	41	78.9	155.3
Escape Time - B 6	72.8	13.77	2.15	41	48.3	108.5
Escape Time - B 7	53.3	11.38	1.78	41	31.5	80.8
Escape Time - B 8	34.4	10.47	1.64	41	17.1	64.1
Escape Time - B 9	30.2	7.17	1.12	41	16.5	51.6
Escape Time - B 10	23.2	6.02	0.94	41	13.1	40.3
Escape Time - A 11	61.3	11.02	1.72	41	37.3	85.4
Escape Time - A 12	36.7	6.07	0.95	41	26.0	54.2
Errors - A 1	14.4	1.90	0.42	21	11.7	18.2
Errors - A 2	10.2	1.58	0.34	21	7.6	13.4
Errors - A 3	6.4	0.99	0.22	21	4.7	8.3
Errors - A 4	4.5	1.32	0.29	21	2.6	7.4
Errors - B 5	18.6	2.75	0.60	21	12.1	23.3
Errors - B 6	9.7	1.81	0.39	21	6.5	13.0
Errors - B 7	6.7	1.95	0.43	21	3.1	10.5
Errors - B 8	3.4	1.53	0.33	21	1.1	6.4
Errors - B 9	2.9	1.18	0.26	21	0.7	5.4
Errors - B 10	2.2	1.03	0.23	21	0.9	4.9
Errors - A 11	8.9	1.30	0.28	21	5.8	11.3
Errors - A 12	4.8	0.97	0.21	21	2.9	6.8

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Females - PND 63						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	7.2	1.26	0.89	2	6.3	8.1
Escape Time - A 1	71.9	33.39	23.61	2	48.2	95.5
Escape Time - A 2	52.7	16.97	12.00	2	40.7	64.7
Escape Time - A 3	24.8	0.82	0.58	2	24.2	25.4
Escape Time - A 4	27.8	0.83	0.58	2	27.3	28.4
Escape Time - B 5	114.8	23.10	16.33	2	98.5	131.2
Escape Time - B 6	78.9	31.14	22.02	2	56.9	100.9
Escape Time - B 7	50.0	30.07	21.26	2	28.7	71.2
Escape Time - B 8	39.9	18.23	12.89	2	27.0	52.8
Escape Time - B 9	40.2	21.66	15.32	2	24.9	55.5
Escape Time - B 10	26.6	15.29	10.81	2	15.8	37.4
Escape Time - A 11	65.4	18.85	13.33	2	52.1	78.7
Escape Time - A 12	39.5	22.50	15.91	2	23.6	55.5
Errors - A 1	14.4	6.66	4.71	2	9.7	19.2
Errors - A 2	10.7	2.84	2.01	2	8.7	12.7
Errors - A 3	4.0	0.45	0.32	2	3.7	4.3
Errors - A 4	4.6	0.04	0.02	2	4.6	4.7
Errors - B 5	17.5	3.78	2.68	2	14.9	20.2
Errors - B 6	8.5	4.47	3.16	2	5.4	11.7
Errors - B 7	5.2	4.16	2.94	2	2.3	8.1
Errors - B 8	4.1	2.25	1.59	2	2.6	5.7
Errors - B 9	3.7	2.89	2.04	2	1.7	5.7
Errors - B 10	2.0	1.61	1.14	2	0.9	3.1
Errors - A 11	8.5	2.16	1.53	2	7.0	10.0
Errors - A 12	4.5	3.29	2.33	2	2.2	6.9

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Females - PND 70						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	5.9	0.68	0.31	5	5.0	6.8
Escape Time - A 1	61.9	11.77	5.26	5	45.9	73.9
Escape Time - A 2	46.0	5.77	2.58	5	41.9	55.8
Escape Time - A 3	29.1	3.91	1.75	5	22.9	33.5
Escape Time - A 4	22.7	2.54	1.14	5	19.2	25.8
Escape Time - B 5	117.2	12.78	5.71	5	96.4	129.3
Escape Time - B 6	78.4	16.80	7.51	5	56.1	101.7
Escape Time - B 7	57.9	15.29	6.84	5	37.7	74.2
Escape Time - B 8	39.9	12.65	5.66	5	28.7	56.4
Escape Time - B 9	41.8	12.07	5.40	5	31.9	62.1
Escape Time - B 10	30.8	7.94	3.55	5	21.8	38.5
Escape Time - A 11	70.0	10.73	4.80	5	57.1	86.6
Escape Time - A 12	39.1	11.03	4.93	5	31.9	58.5

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Females - PND 76						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	7.3	N/A	N/A	1	7.3	7.3
Escape Time - A 1	74.9	N/A	N/A	1	74.9	74.9
Escape Time - A 2	46.4	N/A	N/A	1	46.4	46.4
Escape Time - A 3	28.7	N/A	N/A	1	28.7	28.7
Escape Time - A 4	16.9	N/A	N/A	1	16.9	16.9
Escape Time - B 5	104.1	N/A	N/A	1	104.1	104.1
Escape Time - B 6	35.3	N/A	N/A	1	35.3	35.3
Escape Time - B 7	19.2	N/A	N/A	1	19.2	19.2
Escape Time - B 8	13.0	N/A	N/A	1	13.0	13.0
Escape Time - B 9	18.0	N/A	N/A	1	18.0	18.0
Escape Time - B 10	13.1	N/A	N/A	1	13.1	13.1
Escape Time - A 11	52.3	N/A	N/A	1	52.3	52.3
Escape Time - A 12	27.9	N/A	N/A	1	27.9	27.9
Errors - A 1	15.1	N/A	N/A	1	15.1	15.1
Errors - A 2	9.0	N/A	N/A	1	9.0	9.0
Errors - A 3	5.0	N/A	N/A	1	5.0	5.0
Errors - A 4	1.9	N/A	N/A	1	1.9	1.9
Errors - B 5	17.6	N/A	N/A	1	17.6	17.6
Errors - B 6	3.8	N/A	N/A	1	3.8	3.8
Errors - B 7	1.3	N/A	N/A	1	1.3	1.3
Errors - B 8	0.9	N/A	N/A	1	0.9	0.9
Errors - B 9	0.8	N/A	N/A	1	0.8	0.8
Errors - B 10	1.0	N/A	N/A	1	1.0	1.0
Errors - A 11	5.3	N/A	N/A	1	5.3	5.3
Errors - A 12	2.5	N/A	N/A	1	2.5	2.5

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Females - PND 83						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	6.4	1.51	1.07	2	5.4	7.5
Escape Time - A 1	64.3	19.63	13.88	2	50.4	78.2
Escape Time - A 2	42.6	18.45	13.05	2	29.6	55.7
Escape Time - A 3	26.3	6.48	4.58	2	21.7	30.8
Escape Time - A 4	21.1	2.39	1.69	2	19.4	22.8
Escape Time - B 5	105.5	0.24	0.17	2	105.4	105.7
Escape Time - B 6	53.2	5.48	3.88	2	49.3	57.1
Escape Time - B 7	41.1	3.73	2.64	2	38.5	43.7
Escape Time - B 8	33.2	8.16	5.77	2	27.4	39.0
Escape Time - B 9	26.2	2.49	1.76	2	24.4	28.0
Escape Time - B 10	20.3	3.33	2.36	2	17.9	22.7
Escape Time - A 11	56.4	1.72	1.22	2	55.2	57.6
Escape Time - A 12	32.6	5.94	4.20	2	28.4	36.8
Errors - A 1	14.6	2.59	1.83	2	12.8	16.5
Errors - A 2	8.0	1.81	1.28	2	6.7	9.3
Errors - A 3	4.7	0.63	0.44	2	4.2	5.1
Errors - A 4	3.3	0.32	0.22	2	3.1	3.5
Errors - B 5	14.9	3.11	2.20	2	12.7	17.1
Errors - B 6	6.3	2.80	1.98	2	4.3	8.3
Errors - B 7	5.0	0.51	0.36	2	4.7	5.4
Errors - B 8	3.7	1.40	0.99	2	2.8	4.7
Errors - B 9	3.0	0.55	0.39	2	2.6	3.4
Errors - B 10	2.1	1.01	0.71	2	1.4	2.9
Errors - A 11	8.0	0.43	0.31	2	7.7	8.3
Errors - A 12	4.0	0.69	0.49	2	3.5	4.5

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Females - PND 87						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	6.3	0.29	0.20	2	6.1	6.5
Escape Time - A 1	62.2	12.97	9.17	2	53.0	71.4
Escape Time - A 2	39.3	16.14	11.42	2	27.9	50.7
Escape Time - A 3	33.4	0.11	0.08	2	33.4	33.5
Escape Time - A 4	23.7	4.70	3.33	2	20.4	27.1
Escape Time - B 5	109.7	1.69	1.20	2	108.5	110.9
Escape Time - B 6	65.5	11.38	8.05	2	57.4	73.5
Escape Time - B 7	42.1	5.83	4.12	2	38.0	46.2
Escape Time - B 8	29.4	11.42	8.08	2	21.3	37.5
Escape Time - B 9	41.6	13.45	9.51	2	32.1	51.1
Escape Time - B 10	28.0	1.34	0.95	2	27.1	29.0
Escape Time - A 11	54.2	5.65	4.00	2	50.2	58.2
Escape Time - A 12	33.0	5.79	4.10	2	28.9	37.1
Errors - A 1	12.4	N/A	N/A	1	12.4	12.4
Errors - A 2	11.0	N/A	N/A	1	11.0	11.0
Errors - A 3	6.1	N/A	N/A	1	6.1	6.1
Errors - A 4	3.1	N/A	N/A	1	3.1	3.1
Errors - B 5	18.7	N/A	N/A	1	18.7	18.7
Errors - B 6	7.0	N/A	N/A	1	7.0	7.0
Errors - B 7	4.7	N/A	N/A	1	4.7	4.7
Errors - B 8	4.2	N/A	N/A	1	4.2	4.2
Errors - B 9	6.2	N/A	N/A	1	6.2	6.2
Errors - B 10	2.9	N/A	N/A	1	2.9	2.9
Errors - A 11	8.0	N/A	N/A	1	8.0	8.0
Errors - A 12	5.8	N/A	N/A	1	5.8	5.8

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Females - PND 90						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	7.9	N/A	N/A	1	7.9	7.9
Escape Time - A 1	52.3	N/A	N/A	1	52.3	52.3
Escape Time - A 2	58.1	N/A	N/A	1	58.1	58.1
Escape Time - A 3	28.9	N/A	N/A	1	28.9	28.9
Escape Time - A 4	24.2	N/A	N/A	1	24.2	24.2
Escape Time - B 5	126.1	N/A	N/A	1	126.1	126.1
Escape Time - B 6	63.8	N/A	N/A	1	63.8	63.8
Escape Time - B 7	35.1	N/A	N/A	1	35.1	35.1
Escape Time - B 8	26.5	N/A	N/A	1	26.5	26.5
Escape Time - B 9	26.4	N/A	N/A	1	26.4	26.4
Escape Time - B 10	14.8	N/A	N/A	1	14.8	14.8
Escape Time - A 11	58.3	N/A	N/A	1	58.3	58.3
Escape Time - A 12	22.9	N/A	N/A	1	22.9	22.9
Errors - A 1	10.9	N/A	N/A	1	10.9	10.9
Errors - A 2	11.5	N/A	N/A	1	11.5	11.5
Errors - A 3	6.1	N/A	N/A	1	6.1	6.1
Errors - A 4	4.0	N/A	N/A	1	4.0	4.0
Errors - B 5	22.5	N/A	N/A	1	22.5	22.5
Errors - B 6	7.5	N/A	N/A	1	7.5	7.5
Errors - B 7	4.3	N/A	N/A	1	4.3	4.3
Errors - B 8	1.9	N/A	N/A	1	1.9	1.9
Errors - B 9	1.9	N/A	N/A	1	1.9	1.9
Errors - B 10	0.6	N/A	N/A	1	0.6	0.6
Errors - A 11	8.6	N/A	N/A	1	8.6	8.6
Errors - A 12	2.5	N/A	N/A	1	2.5	2.5

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Females - PND 99						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	6.5	N/A	N/A	1	6.5	6.5
Escape Time - A 1	100.5	N/A	N/A	1	100.5	100.5
Escape Time - A 2	43.1	N/A	N/A	1	43.1	43.1
Escape Time - A 3	20.9	N/A	N/A	1	20.9	20.9
Escape Time - A 4	17.1	N/A	N/A	1	17.1	17.1
Escape Time - B 5	59.4	N/A	N/A	1	59.4	59.4
Escape Time - B 6	45.2	N/A	N/A	1	45.2	45.2
Escape Time - B 7	42.2	N/A	N/A	1	42.2	42.2
Escape Time - B 8	24.5	N/A	N/A	1	24.5	24.5
Escape Time - B 9	12.6	N/A	N/A	1	12.6	12.6
Escape Time - B 10	10.5	N/A	N/A	1	10.5	10.5
Escape Time - A 11	46.8	N/A	N/A	1	46.8	46.8
Escape Time - A 12	19.1	N/A	N/A	1	19.1	19.1
Errors - A 1	19.5	N/A	N/A	1	19.5	19.5
Errors - A 2	7.6	N/A	N/A	1	7.6	7.6
Errors - A 3	2.6	N/A	N/A	1	2.6	2.6
Errors - A 4	1.5	N/A	N/A	1	1.5	1.5
Errors - B 5	7.4	N/A	N/A	1	7.4	7.4
Errors - B 6	3.9	N/A	N/A	1	3.9	3.9
Errors - B 7	2.6	N/A	N/A	1	2.6	2.6
Errors - B 8	0.5	N/A	N/A	1	0.5	0.5
Errors - B 9	0.0	N/A	N/A	1	0.0	0.0
Errors - B 10	0.1	N/A	N/A	1	0.1	0.1
Errors - A 11	4.9	N/A	N/A	1	4.9	4.9
Errors - A 12	1.3	N/A	N/A	1	1.3	1.3

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

Version: ASH_RS_BL_2017.01
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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Females - PND 106						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	7.6	N/A	N/A	1	7.6	7.6
Escape Time - A 1	53.9	N/A	N/A	1	53.9	53.9
Escape Time - A 2	50.9	N/A	N/A	1	50.9	50.9
Escape Time - A 3	32.3	N/A	N/A	1	32.3	32.3
Escape Time - A 4	23.4	N/A	N/A	1	23.4	23.4
Escape Time - B 5	108.8	N/A	N/A	1	108.8	108.8
Escape Time - B 6	74.3	N/A	N/A	1	74.3	74.3
Escape Time - B 7	83.3	N/A	N/A	1	83.3	83.3
Escape Time - B 8	49.2	N/A	N/A	1	49.2	49.2
Escape Time - B 9	21.1	N/A	N/A	1	21.1	21.1
Escape Time - B 10	17.2	N/A	N/A	1	17.2	17.2
Escape Time - A 11	61.1	N/A	N/A	1	61.1	61.1
Escape Time - A 12	37.2	N/A	N/A	1	37.2	37.2

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Females - PND 108						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	6.7	1.00	0.58	3	5.9	7.9
Escape Time - A 1	59.9	9.57	5.53	3	48.9	66.5
Escape Time - A 2	54.0	9.16	5.29	3	48.6	64.6
Escape Time - A 3	39.1	7.66	4.42	3	30.3	44.6
Escape Time - A 4	23.8	5.87	3.39	3	19.4	30.5
Escape Time - B 5	103.6	17.14	9.90	3	88.6	122.3
Escape Time - B 6	58.4	15.15	8.75	3	48.3	75.8
Escape Time - B 7	51.8	7.67	4.43	3	45.0	60.1
Escape Time - B 8	29.2	1.44	0.83	3	28.0	30.8
Escape Time - B 9	28.2	4.27	2.47	3	23.8	32.4
Escape Time - B 10	23.4	3.22	1.86	3	19.7	25.8
Escape Time - A 11	65.7	5.18	2.99	3	61.8	71.6
Escape Time - A 12	30.7	2.52	1.46	3	27.9	32.7
Errors - A 1	13.3	2.06	1.19	3	11.1	15.1
Errors - A 2	11.0	1.32	0.76	3	9.6	12.1
Errors - A 3	7.5	1.96	1.13	3	5.4	9.3
Errors - A 4	3.7	0.91	0.52	3	2.7	4.5
Errors - B 5	16.5	3.52	2.03	3	12.6	19.2
Errors - B 6	7.6	1.44	0.83	3	6.0	8.8
Errors - B 7	6.5	0.85	0.49	3	5.7	7.4
Errors - B 8	2.6	0.82	0.48	3	1.7	3.4
Errors - B 9	2.8	0.61	0.35	3	2.1	3.3
Errors - B 10	1.9	0.33	0.19	3	1.6	2.2
Errors - A 11	9.1	1.62	0.93	3	7.8	10.9
Errors - A 12	3.9	0.64	0.37	3	3.4	4.7

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Females - PND 121						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	5.9	N/A	N/A	1	5.9	5.9
Escape Time - A 1	46.0	N/A	N/A	1	46.0	46.0
Escape Time - A 2	26.6	N/A	N/A	1	26.6	26.6
Escape Time - A 3	20.0	N/A	N/A	1	20.0	20.0
Escape Time - A 4	26.5	N/A	N/A	1	26.5	26.5
Escape Time - B 5	110.3	N/A	N/A	1	110.3	110.3
Escape Time - B 6	66.3	N/A	N/A	1	66.3	66.3
Escape Time - B 7	61.6	N/A	N/A	1	61.6	61.6
Escape Time - B 8	40.2	N/A	N/A	1	40.2	40.2
Escape Time - B 9	21.3	N/A	N/A	1	21.3	21.3
Escape Time - B 10	14.2	N/A	N/A	1	14.2	14.2
Escape Time - A 11	58.7	N/A	N/A	1	58.7	58.7
Escape Time - A 12	44.1	N/A	N/A	1	44.1	44.1
Errors - A 1	9.6	N/A	N/A	1	9.6	9.6
Errors - A 2	5.7	N/A	N/A	1	5.7	5.7
Errors - A 3	2.8	N/A	N/A	1	2.8	2.8
Errors - A 4	4.5	N/A	N/A	1	4.5	4.5
Errors - B 5	17.7	N/A	N/A	1	17.7	17.7
Errors - B 6	10.1	N/A	N/A	1	10.1	10.1
Errors - B 7	8.6	N/A	N/A	1	8.6	8.6
Errors - B 8	3.8	N/A	N/A	1	3.8	3.8
Errors - B 9	1.5	N/A	N/A	1	1.5	1.5
Errors - B 10	0.8	N/A	N/A	1	0.8	0.8
Errors - A 11	7.2	N/A	N/A	1	7.2	7.2
Errors - A 12	6.0	N/A	N/A	1	6.0	6.0

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Developmental Neurotoxicity - Learning and Memory - ANY-Maze

Strain: CRL:CD(SD) RATS

Study Date Range: Jun 2009 / Jul 2017

Number of Studies / Control Groups: 55 / 56

Females - PND 173						
PATH - TRIAL NUMBER	MEAN	SD	SE	COUNT	MIN	MAX
Swimming Ability	8.4	1.16	0.82	2	7.6	9.2
Escape Time - A 1	57.2	13.99	9.89	2	47.3	67.1
Escape Time - A 2	59.7	15.58	11.02	2	48.7	70.7
Escape Time - A 3	33.9	0.54	0.38	2	33.5	34.3
Escape Time - A 4	21.5	1.54	1.09	2	20.4	22.6
Escape Time - B 5	120.1	14.06	9.94	2	110.2	130.1
Escape Time - B 6	57.9	4.55	3.22	2	54.7	61.2
Escape Time - B 7	29.5	6.48	4.58	2	25.0	34.1
Escape Time - B 8	32.6	18.78	13.28	2	19.3	45.9
Escape Time - B 9	24.4	12.68	8.97	2	15.4	33.3
Escape Time - B 10	25.0	13.33	9.43	2	15.5	34.4
Escape Time - A 11	56.0	20.68	14.63	2	41.3	70.6
Escape Time - A 12	27.6	13.17	9.31	2	18.3	36.9
Errors - A 1	12.5	0.35	0.25	2	12.2	12.7
Errors - A 2	12.0	2.76	1.95	2	10.0	13.9
Errors - A 3	5.8	1.84	1.30	2	4.5	7.1
Errors - A 4	2.7	0.14	0.10	2	2.6	2.8
Errors - B 5	14.5	6.01	4.25	2	10.2	18.7
Errors - B 6	6.3	1.41	1.00	2	5.3	7.3
Errors - B 7	2.8	2.26	1.60	2	1.2	4.4
Errors - B 8	3.3	3.11	2.20	2	1.1	5.5
Errors - B 9	2.2	2.33	1.65	2	0.5	3.8
Errors - B 10	2.5	2.33	1.65	2	0.8	4.1
Errors - A 11	7.5	5.66	4.00	2	3.5	11.5
Errors - A 12	3.3	2.69	1.90	2	1.4	5.2

NOTE: Data presented as Study means. Swimming Ability and Escape Time measured in seconds. A and B refer to Path A and Path B. Count is the number of Study means. PND is Postnatal day. N/A means Not applicable.

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Sex: M	Study Type: DNT, Pre/Post-Natal					Strain: CRL:CD(SD)	Species: RAT	Date Range: Dec 2014 - Feb 2017				
HC Number	PND 20											
	Peak (trials)						Time to Peak (in milliseconds; trials)					
	1-10	11-20	21-30	31-40	41-50	Overall	1-10	11-20	21-30	31-40	41-50	Overall
238	684.4	643.0	605.6	614.2	568.3	623.1	28.4	28.3	28.1	27.9	28.0	28.1
253	629.9	653.0	566.5	473.7	440.6	552.8	28.6	29.2	28.7	28.3	27.7	28.5
254	729.5	687.2	541.1	549.7	524.5	606.4	29.3	28.9	28.7	28.7	28.6	28.8
279	608.8	544.2	542.4	533.6	511.1	548.0	29.1	28.3	28.5	28.1	28.3	28.5
4546	647.5	594.6	495.4	505.8	479.3	544.5	28.9	28.5	27.8	27.7	27.5	28.1
4547	827.6	709.7	615.0	619.5	617.8	677.9	28.6	28.4	28.3	27.9	28.2	28.3
4550	970.2	853.5	783.1	786.3	735.6	825.7	28.6	28.9	28.3	28.5	28.5	28.6
4551	454.4	376.6	365.1	315.5	355.3	373.4	28.4	27.6	28.0	27.3	27.1	27.7
4552	752.3	706.4	612.5	630.8	537.7	647.9	28.8	28.5	27.8	28.7	28.1	28.4
4553	882.1	694.9	711.2	690.2	661.3	727.9	28.9	28.1	28.0	28.1	27.7	28.1
4554	585.7	513.0	465.4	484.3	511.1	511.9	28.6	28.0	27.7	27.9	28.3	28.1
4555	534.7	503.5	483.8	449.8	477.9	489.9	28.6	28.8	28.0	27.7	27.8	28.2
4558	648.2	553.6	573.7	552.8	506.9	567.0	28.5	28.1	28.0	28.6	28.0	28.2

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Sex: M	Study Type: DNT, Pre/Post-Natal						Strain: CRL:CD(SD)		Species: RAT		Date Range: Dec 2014 - Feb 2017		
HC Number	PND 20												
	Peak (trials)						Time to Peak (in milliseconds; trials)						
	1-10	11-20	21-30	31-40	41-50	Overall	1-10	11-20	21-30	31-40	41-50	Overall	
Mean	688.9	617.9	566.2	554.3	532.9	592.0	28.7	28.4	28.1	28.1	28.0	28.3	
StDev	142.61	121.38	107.16	118.36	97.35	113.93	0.28	0.43	0.33	0.43	0.42	0.28	
SEM	39.55	33.66	29.72	32.83	27.00	31.60	0.08	0.12	0.09	0.12	0.12	0.08	
Count	13	13	13	13	13	13	13	13	13	13	13	13	
Min	454.4	376.6	365.1	315.5	355.3	373.4	28.4	27.6	27.7	27.3	27.1	27.7	
Max	970.2	853.5	783.1	786.3	735.6	825.7	29.3	29.2	28.7	28.7	28.6	28.8	
25th Quartile	608.8	544.2	495.4	484.3	479.3	544.5	28.6	28.1	28.0	27.9	27.7	28.1	
75th Quartile	752.3	694.9	612.5	619.5	568.3	647.9	28.9	28.8	28.3	28.5	28.3	28.5	
NA = Not applicable													

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Sex: M	Study Type: DNT, Pre/Post-Natal					Strain: CRL:CD(SD)	Species: RAT	Date Range: Dec 2014 - Feb 2017				
HC Number	PND 60											
	Peak (trials)						Time to Peak (in milliseconds; trials)					
	1-10	11-20	21-30	31-40	41-50	Overall	1-10	11-20	21-30	31-40	41-50	Overall
221	758.1	641.2	573.8	581.5	587.8	628.5	28.9	28.6	28.4	28.3	28.0	28.4
238	687.9	458.0	435.1	361.5	335.8	455.7	28.6	28.8	28.0	27.7	27.3	28.1
253	677.4	627.6	682.1	628.6	667.0	656.5	28.8	28.2	28.4	28.1	28.2	28.3
254	724.2	690.1	677.4	634.6	643.2	673.9	28.7	28.4	28.1	27.7	27.7	28.1
279	590.5	444.7	516.2	551.7	459.0	512.4	28.7	28.5	28.1	27.8	27.5	28.1
4546	725.4	633.0	589.1	544.2	618.2	622.0	29.0	28.6	28.1	28.7	28.6	28.6
4547	851.3	651.4	653.5	688.2	648.9	698.7	28.6	28.0	28.6	28.4	27.9	28.3
4548	618.7	524.5	535.3	495.0	438.4	522.4	29.1	28.3	28.8	29.0	28.7	28.8
4549	1100.4	865.4	839.2	837.0	747.6	877.9	28.2	28.6	27.7	27.7	28.3	28.1
4551	577.9	518.7	565.8	447.4	421.8	506.3	28.8	28.0	28.1	27.5	28.2	28.1
4552	675.2	594.9	616.2	558.6	479.1	584.8	29.1	27.9	29.0	27.5	27.8	28.3
4553	644.1	513.6	441.0	393.7	390.2	476.5	29.3	28.6	28.2	28.4	28.8	28.7
4554	524.0	479.9	503.3	423.8	359.6	458.1	29.1	28.7	27.9	27.9	28.8	28.5
4555	680.7	514.1	441.1	426.5	409.3	494.3	29.2	28.4	28.5	28.1	28.4	28.5
4556	700.8	556.3	458.3	521.0	568.6	561.0	28.5	28.2	27.8	27.6	27.9	28.0
4557	737.7	560.6	601.5	551.1	551.3	600.5	28.6	28.6	28.2	27.5	27.9	28.1
4558	461.6	472.5	371.6	352.4	352.1	402.1	28.9	28.5	28.6	28.1	28.6	28.6

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Sex: M	Study Type: DNT, Pre/Post-Natal					Strain: CRL:CD(SD)	Species: RAT			Date Range: Dec 2014 - Feb 2017		
HC Number	PND 60											
	Peak (trials)						Time to Peak (in milliseconds; trials)					
	1-10	11-20	21-30	31-40	41-50	Overall	1-10	11-20	21-30	31-40	41-50	Overall
Mean	690.3	573.3	558.9	529.2	510.5	572.4	28.8	28.4	28.3	28.0	28.1	28.3
StDev	140.04	105.56	116.41	125.79	127.44	115.87	0.29	0.27	0.36	0.43	0.46	0.24
SEM	33.96	25.60	28.23	30.51	30.91	28.10	0.07	0.07	0.09	0.11	0.11	0.06
Count	17	17	17	17	17	17	17	17	17	17	17	17
Min	461.6	444.7	371.6	352.4	335.8	402.1	28.2	27.9	27.7	27.5	27.3	28.0
Max	1100.4	865.4	839.2	837.0	747.6	877.9	29.3	28.8	29.0	29.0	28.8	28.8
25th Quartile	618.7	513.6	458.3	426.5	409.3	494.3	28.6	28.2	28.1	27.7	27.9	28.1
75th Quartile	725.4	633.0	616.2	581.5	618.2	628.5	29.1	28.6	28.5	28.3	28.6	28.5

NA = Not applicable

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Sex: F	Study Type: DNT, Pre/Post-Natal					Strain: CRL:CD(SD)	Species: RAT	Date Range: Dec 2014 - Feb 2017				
HC Number	PND 20											
	Peak (trials)						Time to Peak (in milliseconds; trials)					
	1-10	11-20	21-30	31-40	41-50	Overall	1-10	11-20	21-30	31-40	41-50	Overall
238	649.6	555.2	539.4	460.5	446.1	530.2	28.2	28.0	27.2	26.8	27.9	27.6
253	651.7	569.7	499.6	463.2	476.0	532.0	28.8	27.8	27.5	27.9	28.3	28.0
254	728.8	599.9	534.7	510.7	547.0	584.2	29.0	28.4	28.1	27.8	27.8	28.2
279	681.3	659.5	573.7	527.3	608.7	610.1	28.1	28.9	28.3	27.5	28.0	28.2
4546	551.3	469.1	475.2	461.3	445.8	480.5	28.2	27.5	27.7	27.4	27.6	27.7
4547	807.9	618.1	661.1	664.4	586.5	667.6	28.5	27.5	27.8	28.0	27.6	27.9
4550	835.7	747.8	684.6	623.7	623.7	703.1	28.2	28.2	28.3	27.8	28.6	28.2
4551	513.4	433.0	384.2	361.8	357.8	410.0	28.4	28.2	27.3	27.2	27.3	27.7
4552	720.9	626.3	625.2	646.7	624.6	648.7	28.4	28.9	28.4	28.0	28.1	28.4
4553	903.0	720.5	679.6	614.9	598.1	703.2	28.8	28.1	27.9	27.5	27.7	28.0
4554	610.1	448.9	460.6	493.4	470.8	496.8	28.4	28.1	28.2	27.6	27.9	28.0
4555	633.9	571.0	576.0	485.0	481.2	549.4	28.6	28.1	28.0	27.9	27.9	28.1
4558	644.1	542.4	499.4	504.6	504.5	539.0	28.5	28.0	27.7	27.8	27.6	27.9

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Sex: F	Study Type: DNT, Pre/Post-Natal						Strain: CRL:CD(SD)		Species: RAT		Date Range: Dec 2014 - Feb 2017		
HC Number	PND 20												
	Peak (trials)						Time to Peak (in milliseconds; trials)						
	1-10	11-20	21-30	31-40	41-50	Overall	1-10	11-20	21-30	31-40	41-50	Overall	
Mean	687.0	581.6	553.3	524.4	520.8	573.5	28.5	28.1	27.9	27.6	27.9	28.0	
StDev	111.09	96.38	91.52	88.49	83.77	89.54	0.27	0.43	0.38	0.34	0.34	0.23	
SEM	30.81	26.73	25.38	24.54	23.23	24.84	0.07	0.12	0.11	0.10	0.09	0.06	
Count	13	13	13	13	13	13	13	13	13	13	13	13	
Min	513.4	433.0	384.2	361.8	357.8	410.0	28.1	27.5	27.2	26.8	27.3	27.6	
Max	903.0	747.8	684.6	664.4	624.6	703.2	29.0	28.9	28.4	28.0	28.6	28.4	
25th Quartile	633.9	542.4	499.4	463.2	470.8	530.2	28.2	28.0	27.7	27.5	27.6	27.9	
75th Quartile	728.8	626.3	625.2	614.9	598.1	648.7	28.6	28.2	28.2	27.9	28.0	28.2	
NA = Not applicable													

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Sex: F	Study Type: DNT, Pre/Post-Natal						Strain: CRL:CD(SD)		Species: RAT		Date Range: Dec 2014 - Feb 2017		
HC Number	PND 60												
	Peak (trials)						Time to Peak (in milliseconds; trials)						
	1-10	11-20	21-30	31-40	41-50	Overall	1-10	11-20	21-30	31-40	41-50	Overall	
221	563.9	501.5	477.4	415.5	395.5	470.8	28.4	28.2	28.1	27.8	27.2	27.9	
238	371.5	256.2	276.4	271.9	266.9	288.6	30.0	28.6	28.5	28.8	28.1	28.8	
253	746.0	712.1	707.2	657.6	565.1	677.6	28.8	28.2	27.6	27.6	27.8	28.0	
254	564.4	513.1	492.4	498.1	471.6	507.9	28.7	27.9	27.5	27.4	27.9	27.8	
279	418.8	362.1	319.5	343.5	396.6	368.1	28.6	27.4	26.8	26.9	27.7	27.5	
4546	561.4	437.6	447.1	459.0	396.6	460.3	28.8	28.6	27.5	27.9	27.1	28.0	
4547	682.4	635.6	569.3	569.0	613.5	614.0	28.5	27.1	27.8	28.2	27.7	27.9	
4548	518.5	420.9	390.0	368.4	352.1	410.0	29.5	27.9	28.4	27.4	27.6	28.2	
4549	821.8	667.1	710.5	715.5	701.1	723.2	28.1	27.5	27.3	27.3	27.5	27.5	
4551	546.5	462.2	449.4	387.4	386.1	446.3	27.8	28.3	28.2	28.6	27.0	28.0	
4552	547.6	450.8	491.1	455.2	470.3	483.0	28.2	27.9	27.5	27.2	27.0	27.5	
4553	533.0	468.6	430.4	409.8	429.3	454.2	28.4	27.7	27.8	27.3	27.0	27.6	
4554	515.0	418.4	408.2	397.6	392.9	426.4	29.2	27.7	28.2	27.8	27.2	28.0	
4555	487.8	400.7	342.5	327.5	329.7	377.6	28.5	28.4	27.7	27.2	27.9	27.9	
4556	575.6	505.4	496.3	506.3	418.8	500.5	28.8	28.6	27.5	27.9	27.3	28.0	
4557	669.0	531.2	577.1	541.5	521.0	568.0	28.0	27.5	27.6	27.3	26.8	27.5	
4558	532.0	452.2	404.7	464.8	440.4	458.8	29.0	28.3	28.1	27.7	27.6	28.2	

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Sex: F	Study Type: DNT, Pre/Post-Natal						Strain: CRL:CD(SD)		Species: RAT		Date Range: Dec 2014 - Feb 2017		
HC Number	PND 60												
	Peak (trials)						Time to Peak (in milliseconds; trials)						
	1-10	11-20	21-30	31-40	41-50	Overall	1-10	11-20	21-30	31-40	41-50	Overall	
Mean	568.0	482.1	470.0	458.2	444.0	484.4	28.7	28.0	27.8	27.7	27.4	27.9	
StDev	110.53	111.61	120.02	115.92	107.07	110.36	0.55	0.47	0.42	0.50	0.39	0.32	
SEM	26.81	27.07	29.11	28.11	25.97	26.77	0.13	0.11	0.10	0.12	0.09	0.08	
Count	17	17	17	17	17	17	17	17	17	17	17	17	
Min	371.5	256.2	276.4	271.9	266.9	288.6	27.8	27.1	26.8	26.9	26.8	27.5	
Max	821.8	712.1	710.5	715.5	701.1	723.2	30.0	28.6	28.5	28.8	28.1	28.8	
25th Quartile	518.5	420.9	404.7	387.4	392.9	426.4	28.4	27.7	27.5	27.3	27.1	27.6	
75th Quartile	575.6	513.1	496.3	506.3	471.6	507.9	28.8	28.3	28.1	27.9	27.7	28.0	
NA = Not applicable													

NA = Not applicable

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Sex: M		Study Type: DNT, Pre/Post-Natal					Strain: CRL:CD(SD)	Species: RAT			Date Range: Jan 2012 - Feb 2017				
		TOTAL						AMBULATORY							
		PND 13													
Minutes	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	
HC Number															
238	417	272	201	109	92	149	1240	129	84	69	15	16	20	332	
Mean	417	272	201	109	92	149	1240	129	84	69	15	16	20	332	
StDev	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
SEM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Count	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Min	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Max	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
25th Quartile	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
75th Quartile	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

NA = Not applicable

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Sex: M		Study Type: DNT, Pre/Post-Natal					Strain: CRL:CD(SD)		Species: RAT		Date Range: Jan 2012 - Feb 2017				
		TOTAL						AMBULATORY							
		PND 17													
Minutes	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	
HC Number															
238	1187	363	438	303	214	219	2724	477	133	175	104	67	69	1025	
Mean	1187	363	438	303	214	219	2724	477	133	175	104	67	69	1025	
StDev	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
SEM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Count	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Min	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Max	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
25th Quartile	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
75th Quartile	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

NA = Not applicable

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Sex: M	Study Type: DNT, Pre/Post-Natal							Strain: CRL:CD(SD)	Species: RAT			Date Range: Jan 2012 - Feb 2017				
	TOTAL							AMBULATORY								
	PND 21															
	Minutes	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	
HC Number																
142	1530	576	324	135	54	69	2688	632	163	94	35	4	12	939		
148	1628	699	454	451	288	301	3821	704	247	151	164	105	120	1491		
149	1525	606	327	238	204	210	3110	620	199	88	65	70	74	1116		
152	1698	769	497	497	354	200	4014	726	271	176	177	119	52	1521		
161	1539	614	344	289	192	119	3098	635	182	110	85	66	34	1112		
164	1615	704	557	292	247	160	3577	675	231	181	84	79	49	1298		
165	1703	741	387	357	244	233	3666	699	233	112	119	75	72	1310		
176	1626	633	451	302	273	312	3597	653	179	140	88	83	106	1249		
177	1667	664	481	383	304	168	3667	710	204	157	128	95	50	1344		
178	1625	699	412	308	180	54	3277	677	227	130	106	51	5	1196		
235	1520	519	326	202	207	128	2901	610	159	103	66	62	34	1035		
238	1304	402	251	192	137	157	2442	501	121	62	55	36	33	807		
251	1593	597	424	332	347	298	3591	662	193	146	112	117	106	1336		
253	1762	718	511	388	423	299	4101	750	218	169	133	146	107	1523		
254	1852	799	624	487	381	353	4497	780	249	208	166	126	125	1653		
279	1623	580	243	65	73	72	2656	680	175	72	9	10	15	961		
4546	1571	713	458	311	358	341	3753	641	225	147	101	125	120	1360		
4547	1781	771	564	391	283	254	4045	746	244	176	126	91	83	1466		
4550	1346	316	208	172	111	180	2333	529	79	63	47	21	41	779		

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Sex: M	Study Type: DNT, Pre/Post-Natal						Strain: CRL:CD(SD)	Species: RAT			Date Range: Jan 2012 - Feb 2017			
	TOTAL							AMBULATORY						
	PND 21													
Minutes	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative
HC Number														
4551	1723	721	380	235	256	221	3536	770	262	122	72	90	82	1399
4552	1642	691	420	283	173	112	3320	626	172	103	73	40	32	1046
4553	1808	849	459	305	241	263	3924	718	266	132	103	82	81	1382
4554	1610	710	445	351	294	127	3538	640	230	154	110	96	31	1260
4555	1763	764	386	263	232	167	3574	755	259	114	87	80	58	1352
4558	1794	793	474	288	130	190	3669	753	266	155	88	30	54	1346
Mean	1634	666	416	301	239	200	3456	676	210	131	96	76	63	1251
StDev	132.2	122.4	101.8	103.4	95.5	86.6	537.6	70.1	48.2	38.5	40.5	37.7	36.1	226.8
SEM	26.4	24.5	20.4	20.7	19.1	17.3	107.5	14.0	9.6	7.7	8.1	7.5	7.2	45.4
Count	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Min	1304	316	208	65	54	54	2333	501	79	62	9	4	5	779
Max	1852	849	624	497	423	353	4497	780	271	208	177	146	125	1653
25th Quartile	1571	606	344	238	180	128	3110	635	179	103	72	51	34	1112
75th Quartile	1723	741	474	357	294	263	3753	726	247	155	119	96	83	1382

NA = Not applicable

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Sex: M		Study Type: DNT, Pre/Post-Natal				Strain: CRL:CD(SD)			Species: RAT			Date Range: Jan 2012 - Feb 2017			
		TOTAL						AMBULATORY							
		PND 30													
Minutes		0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative
HC Number															
166		2334	813	458	492	472	222	4790	846	223	98	150	128	59	1503
Mean		2334	813	458	492	472	222	4790	846	223	98	150	128	59	1503
StDev		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SEM		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Count		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Min		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Max		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
25th Quartile		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
75th Quartile		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA = Not applicable

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Sex: M	Study Type: DNT, Pre/Post-Natal							Strain: CRL:CD(SD)	Species: RAT			Date Range: Jan 2012 - Feb 2017				
HC Number	TOTAL							AMBULATORY								
	PND 61															
	Minutes	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	
142	1524	1064	734	556	388	302	4568		426	226	121	85	58	47	963	
148	1650	1015	758	581	239	260	4502		445	196	137	104	36	40	957	
149	1717	1176	773	458	261	155	4539		485	247	127	66	36	18	979	
152	1659	1077	772	530	352	215	4605		441	227	142	90	52	26	978	
161	1507	1040	593	357	245	135	3878		405	199	89	49	35	11	788	
164	1665	1077	665	504	270	185	4366		447	219	113	65	31	16	890	
165	1501	1050	680	507	468	335	4541		413	202	115	75	60	56	921	
166	1531	1173	790	714	470	467	5144		427	275	155	126	85	90	1157	
176	1615	1166	899	714	555	442	5391		445	259	189	149	101	70	1214	
177	1561	997	746	540	373	222	4441		452	210	135	78	62	33	970	
178	1543	959	630	349	185	160	3825		451	209	109	46	25	21	861	
221	1511	594	139	38	33	47	2363		414	86	8	4	1	1	514	
235	1552	1017	706	449	183	141	4046		419	188	114	67	21	16	824	
238	1876	828	402	241	128	90	3564		540	165	66	35	15	8	829	
251	1639	1176	846	631	413	244	4948		506	278	163	117	58	36	1157	
253	1627	828	387	237	92	92	3262		443	144	59	31	13	11	701	
254	1621	648	291	154	96	87	2896		421	107	47	26	9	10	619	
279	1615	789	245	105	93	67	2914		444	132	38	13	14	9	650	
4546	1563	882	520	379	419	354	4117		386	167	98	60	79	65	854	

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Sex: M	Study Type: DNT, Pre/Post-Natal							Strain: CRL:CD(SD)	Species: RAT			Date Range: Jan 2012 - Feb 2017			
	TOTAL							AMBULATORY							
	PND 61														
Minutes	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	
HC Number															
4547	1515	763	546	301	129	105	3359	402	147	100	41	15	11	715	
4548	1545	933	400	175	93	95	3240	396	186	58	23	6	11	679	
4549	1627	762	330	180	139	59	3097	446	122	54	28	22	6	678	
4551	1458	888	480	235	183	168	3412	389	164	76	29	25	18	699	
4552	1544	860	353	136	85	133	3109	380	147	43	17	10	15	611	
4553	1732	1119	656	380	209	94	4189	446	208	103	54	20	9	840	
4554	1454	960	617	352	211	129	3724	368	173	99	46	30	16	733	
4555	1534	799	547	245	155	189	3469	413	144	91	33	18	28	728	
4556	1587	802	306	149	96	68	3006	434	143	40	23	14	11	664	
4557	1543	930	500	281	123	84	3462	360	172	86	39	14	10	682	
4558	1619	933	517	438	267	187	3961	416	177	89	70	35	24	813	
Mean	1588	943	561	364	232	177	3865	429	184	95	56	33	25	822	
StDev	88.1	156.1	195.9	183.8	138.9	110.5	741.3	38.1	47.3	41.7	35.1	25.3	21.4	172.1	
SEM	16.1	28.5	35.8	33.6	25.4	20.2	135.3	7.0	8.6	7.6	6.4	4.6	3.9	31.4	
Count	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
Min	1454	594	139	38	33	47	2363	360	86	8	4	1	1	514	
Max	1876	1176	899	714	555	467	5391	540	278	189	149	101	90	1214	
25th Quartile	1531	828	400	236	125	93	3286	407	147	61	29	15	11	686	
75th Quartile	1627	1060	727	506	332	220	4486	446	209	119	74	48	31	948	

NA = Not applicable

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Sex: F		Study Type: DNT, Pre/Post-Natal						Strain: CRL:CD(SD)		Species: RAT		Date Range: Jan 2012 - Feb 2017			
		TOTAL						AMBULATORY							
		PND 13													
Minutes	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	
HC Number															
238	449	333	333	173	95	118	1502	131	90	86	42	10	16	376	
Mean	449	333	333	173	95	118	1502	131	90	86	42	10	16	376	
StDev	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
SEM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Count	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Min	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Max	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
25th Quartile	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
75th Quartile	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

NA = Not applicable

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Sex: F		Study Type: DNT, Pre/Post-Natal					Strain: CRL:CD(SD)		Species: RAT		Date Range: Jan 2012 - Feb 2017				
		TOTAL						AMBULATORY							
		PND 17													
Minutes	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	
HC Number															
238	1420	371	350	306	110	103	2660	668	131	128	117	21	26	1091	
Mean	1420	371	350	306	110	103	2660	668	131	128	117	21	26	1091	
StDev	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
SEM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Count	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Min	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Max	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
25th Quartile	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
75th Quartile	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

NA = Not applicable

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Sex: F	Study Type: DNT, Pre/Post-Natal							Strain: CRL:CD(SD)	Species: RAT			Date Range: Jan 2012 - Feb 2017			
HC Number	TOTAL							AMBULATORY							
	PND 21														
	Minutes	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative
142	1379	460	217	112	95	95	2359	554	124	55	30	28	31	821	
148	1605	620	530	225	125	212	3317	692	198	182	61	30	64	1229	
149	1300	482	294	114	119	84	2393	524	153	84	28	29	20	837	
152	1624	684	408	304	238	175	3434	717	236	127	95	82	57	1314	
161	1507	558	335	193	69	48	2710	636	181	112	48	7	8	992	
164	1555	654	400	279	214	85	3187	666	215	133	89	55	12	1170	
165	1783	597	293	240	237	203	3352	759	181	87	78	69	67	1242	
176	1544	684	392	371	218	187	3396	644	209	120	134	76	63	1246	
177	1536	659	339	276	206	145	3161	653	218	105	88	60	39	1164	
178	1553	520	434	228	169	176	3079	654	157	130	69	54	52	1115	
235	1594	556	256	198	135	76	2816	671	176	73	59	31	17	1026	
238	1500	430	247	188	95	119	2578	660	126	76	51	19	36	968	
251	1650	568	322	243	158	163	3104	710	176	99	86	44	47	1161	
253	1802	785	596	497	321	248	4249	793	269	196	173	121	81	1632	
254	1688	695	472	317	180	178	3530	718	227	136	91	52	58	1281	
279	1580	603	371	201	74	79	2907	654	183	112	57	16	17	1039	
4546	1674	676	516	295	302	199	3662	720	213	161	87	99	55	1334	
4547	1661	618	373	291	216	272	3432	699	212	111	91	69	95	1277	
4550	1435	483	205	160	188	121	2591	591	145	51	43	62	29	921	

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Sex: F	Study Type: DNT, Pre/Post-Natal							Strain: CRL:CD(SD)	Species: RAT			Date Range: Jan 2012 - Feb 2017			
	TOTAL							AMBULATORY							
	PND 21														
Minutes	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	
HC Number															
4551	1745	789	476	390	285	135	3821	803	288	156	136	92	39	1514	
4552	1295	401	350	154	117	79	2396	488	105	104	39	36	20	791	
4553	1533	650	350	292	135	94	3053	592	192	95	90	32	20	1021	
4554	1549	544	175	66	66	24	2424	635	147	41	3	8	2	836	
4555	1619	623	338	264	197	265	3305	696	210	106	90	68	104	1273	
4558	1864	878	599	250	173	93	3856	804	299	184	69	44	24	1424	
Mean	1583	609	372	246	173	142	3124	669	194	113	75	51	42	1145	
StDev	140.7	114.6	114.3	93.9	71.5	67.9	507.3	80.1	48.6	40.8	36.8	29.1	27.0	220.1	
SEM	28.1	22.9	22.9	18.8	14.3	13.6	101.5	16.0	9.7	8.2	7.4	5.8	5.4	44.0	
Count	25	25	25	25	25	25	25	25	25	25	25	25	25	25	
Min	1295	401	175	66	66	24	2359	488	105	41	3	7	2	791	
Max	1864	878	599	497	321	272	4249	804	299	196	173	121	104	1632	
25th Quartile	1533	544	294	193	119	85	2710	636	157	87	51	30	20	992	
75th Quartile	1661	676	434	292	216	187	3432	717	215	133	90	69	58	1277	

NA = Not applicable

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Sex: F	Study Type: DNT, Pre/Post-Natal							Strain: CRL:CD(SD)	Species: RAT	Date Range: Jan 2012 - Feb 2017					
	TOTAL							AMBULATORY							
	PND 30														
Minutes	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	
HC Number															
166	2381	650	347	294	440	404	4516	921	183	77	77	134	104	1494	
Mean	2381	650	347	294	440	404	4516	921	183	77	77	134	104	1494	
StDev	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
SEM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Count	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Min	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Max	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
25th Quartile	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
75th Quartile	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

NA = Not applicable

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Sex: F	Study Type: DNT, Pre/Post-Natal							Strain: CRL:CD(SD)	Species: RAT			Date Range: Jan 2012 - Feb 2017			
HC Number	TOTAL							AMBULATORY							
	PND 61														
	Minutes	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative
142	1948	1146	842	627	361	356	5279	671	300	194	146	77	79	1466	
148	1877	1058	651	350	229	273	4438	669	279	143	69	48	68	1275	
149	2023	1199	793	533	372	232	5152	713	309	185	115	79	50	1451	
152	1948	1275	921	605	318	309	5375	680	321	206	126	53	66	1453	
161	1882	1159	885	592	498	475	5490	647	301	212	126	97	110	1492	
164	1988	1254	811	435	283	212	4983	716	350	179	90	62	47	1444	
165	1962	1213	824	679	526	451	5654	685	320	189	153	114	99	1561	
166	2081	1415	986	742	617	572	6413	744	377	242	174	144	128	1809	
176	1912	1164	786	663	482	397	5403	683	306	188	165	101	101	1543	
177	1841	1103	791	526	373	272	4906	679	302	172	114	79	56	1403	
178	1825	1067	715	500	372	242	4722	656	286	164	110	81	53	1349	
221	1916	1002	203	63	62	71	3317	661	242	24	8	10	9	954	
235	1862	1144	610	353	165	144	4278	648	291	114	64	21	26	1164	
238	2585	1119	520	311	250	245	5031	935	302	113	70	47	55	1522	
251	2057	1362	909	609	429	352	5717	778	392	231	135	104	81	1722	
253	2003	1015	489	277	305	192	4280	668	272	102	52	55	37	1186	
254	2116	1053	282	128	113	84	3776	744	256	40	23	27	11	1101	
279	2118	1037	320	152	152	263	4042	732	258	61	31	39	66	1187	
4546	1889	1125	612	308	248	171	4353	620	296	130	62	38	33	1178	

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Sex: F	Study Type: DNT, Pre/Post-Natal							Strain: CRL:CD(SD)							Species: RAT							Date Range: Jan 2012 - Feb 2017						
	TOTAL							AMBULATORY																				
	PND 61																											
	Minutes	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative	0-10	11-20	21-30	31-40	41-50	51-60	Cumulative													
HC Number																												
4547	1744	1001	563	455	300	200	4262	597	251	120	104	57	37	1166														
4548	1997	1149	478	204	106	187	4120	631	261	90	31	12	41	1066														
4549	1903	1003	582	222	130	253	4094	650	238	123	39	21	53	1124														
4551	1861	1006	414	124	114	163	3684	665	262	82	23	27	34	1094														
4552	2002	1128	550	301	224	145	4350	630	259	106	67	46	22	1130														
4553	2212	1119	575	278	100	136	4421	714	275	118	62	13	34	1217														
4554	2036	1192	538	297	202	279	4543	656	289	114	59	43	70	1231														
4555	2035	954	540	274	173	120	4095	714	252	145	58	31	21	1220														
4556	1984	967	450	186	102	129	3819	682	257	96	39	23	26	1124														
4557	2019	1211	501	274	145	96	4246	677	308	107	57	27	22	1197														
4558	2176	1405	868	529	284	247	5510	693	362	204	111	62	44	1477														
Mean	1993	1135	634	387	268	242	4658	688	292	140	83	55	53	1310														
StDev	154.2	122.0	202.8	189.5	144.7	120.0	721.0	61.3	39.2	55.6	46.0	33.7	29.6	206.8														
SEM	28.2	22.3	37.0	34.6	26.4	21.9	131.6	11.2	7.2	10.2	8.4	6.1	5.4	37.7														
Count	30	30	30	30	30	30	30	30	30	30	30	30	30	30														
Min	1744	954	203	63	62	71	3317	597	238	24	8	10	9	954														
Max	2585	1415	986	742	617	572	6413	935	392	242	174	144	128	1809														
25th Quartile	1893	1041	506	274	147	149	4152	656	260	106	53	27	33	1164														
75th Quartile	2036	1198	806	532	369	277	5247	713	307	187	115	78	67	1463														

NA = Not applicable

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Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Reproductive Performance

Sex: Male/Female	Species: Rat	Number of Studies/Control Groups: 76 / 78					
Study Type: OECD 421 / 422 / 443; CTA	Strain: Crl:CD(SD)	Range of Study Dates: 06/06 - 05/18					
	<u>Total</u>	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Number of Males in Control Group	934						
Male Mating Index (%)		98.0	3.95	77	90.10 / 100.00	86.15 / 100.00	83.3 / 100.0
Male Fertility Index (%)		93.9	6.28	77	81.34 / 100.00	75.06 / 100.00	80.0 / 100.0
Male Copulation Index (%)		95.7	5.62	77	84.46 / 100.00	78.84 / 100.00	80.0 / 100.0
Number of Females in Control Group	936						
Female Mating Index (%)		98.0	3.95	77	90.10 / 100.00	86.15 / 100.00	83.3 / 100.0
Female Fertility Index (%)		93.9	6.28	77	81.34 / 100.00	75.06 / 100.00	80.0 / 100.0
Female Conception Index (%)		95.7	5.61	77	84.48 / 100.00	78.87 / 100.00	80.0 / 100.0
Number of Females Selected to Deliver	987						
Number that Delivered	867						
Number that Did Not Deliver	51						
Number that Died Prior to Delivery	0						
Number with Total Litter Loss	6						
Number with Dystocia	0						

N = Count of study means from control groups; NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Reproductive Performance

Sex: Female	Species: Rat			Number of Studies/Control Groups: 76 / 82		
Study Type: OECD 421 / 422 / 443; CTA	Strain: Crl:CD(SD)			Range of Study Dates: 06/06 - 05/18		
	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Estrous Cycle Length (days)	4.2	0.29	35	3.62 / 4.78	3.33 / 5.07	3.9 / 5.2
Mean Pre-Coital Interval (days)	2.7	0.52	76	1.66 / 3.74	1.14 / 4.26	1.4 / 4.5
Mean Gestation Length (days)	21.8	0.21	78	21.38 / 22.22	21.17 / 22.43	20.9 / 22.1
Mean Number of Pups Born	14.3	0.79	78	12.72 / 15.88	11.93 / 16.67	12.1 / 15.9
Mean Viable Litter Size (PND 0)	14.1	0.82	78	12.46 / 15.74	11.64 / 16.56	11.9 / 15.8
Mean % Males/ Litter	49.6	3.71	78	42.18 / 57.02	38.47 / 60.73	39.3 / 56.7
Mean % Females/ Litter	50.5	3.81	78	42.88 / 58.12	39.07 / 61.93	43.3 / 60.7
Mean No. of Former Implantation Sites at Weaning	15.2	0.91	77	13.38 / 17.02	12.47 / 17.93	12.3 / 17.8
Mean No. of Sites Unaccounted for at Weaning	0.9	0.49	78	0.00 / 1.88	0.00 / 2.37	0.2 / 3.6
Mean No. of Corpora Lutea/Dam	16.8	1.29	42	14.22 / 19.38	12.93 / 20.67	14.6 / 20.0

N = Count of study means from control groups; NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Pup Survival Indices (%)

Sex: Male/Female	Species: Rat			Number of Studies/Control Groups: 77 / 79		
Study Type: OECD 421 / 422 / 443; CTA	Strain: Crl:CD(SD)		Age Range: 0 - 13 Days		Range of Study Dates: 06/06 - 05/18	
	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Number of Pups Born	14.3	0.84	79	12.62 / 15.98	11.78 / 16.82	12.1 / 16.6
Survival (%)						
PND 0 (Relative to No. Born)	97.2	10.20	79	76.80 / 100.00	66.60 / 100.00	10.0 / 100.0
PND 0 to PND 1	98.9	1.65	79	95.60 / 100.00	93.95 / 100.00	89.1 / 100.0
PND 1 to PND 4 (Before Selection)	97.2	10.25	79	76.70 / 100.00	66.45 / 100.00	10.0 / 100.0
PND 4 (After Selection) to PND 7	96.9	15.38	34	66.14 / 100.00	50.76 / 100.00	10.0 / 100.0
PND 7 to PND 10	96.4	17.63	26	61.14 / 100.00	43.51 / 100.00	10.0 / 100.0
PND 10 to PND 13	99.9	0.64	25	98.62 / 100.00	97.98 / 100.00	96.8 / 100.0
Birth to PND 4 (Before Selection)	95.7	3.72	79	88.26 / 100.00	84.54 / 100.00	84.5 / 100.0
PND 4 (After Selection) to PND 13	99.6	0.96	24	97.68 / 100.00	96.72 / 100.00	95.8 / 100.0

N = Count of study means from control groups; NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Pup Body Weights (g)

Sex: Male/Female		Species: Rat			Number of Studies/Control Groups:		75 / 77
Study Type: OECD 421 / 422 / 443; CTA		Strain: Crl:CD(SD)		Age Range: 1 - 13 Days		Range of Study Dates: 06/06 - 05/18	
	<u>PND</u>	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Males (g)	PND 1	7.1	0.35	77	6.40 / 7.80	6.05 / 8.15	6.4 / 8.2
	PND 4	9.9	0.77	77	8.36 / 11.44	7.59 / 12.21	8.3 / 12.0
	PND 7	17.1	1.44	33	14.22 / 19.98	12.78 / 21.42	14.2 / 19.8
	PND 10	25.2	1.87	27	21.46 / 28.94	19.59 / 30.81	19.9 / 28.6
	PND 13	32.8	2.43	26	27.94 / 37.66	25.51 / 40.09	26.0 / 36.8
Females (g)	PND 1	6.8	0.35	77	6.10 / 7.50	5.75 / 7.85	6.0 / 7.8
	PND 4	9.4	0.77	77	7.86 / 10.94	7.09 / 11.71	7.8 / 11.3
	PND 7	16.4	1.26	33	13.88 / 18.92	12.62 / 20.18	13.8 / 18.8
	PND 10	31.8	39.64	27	-47.48 / 111.08	-87.12 / 150.72	19.7 / 230.0
	PND 13	31.7	2.26	26	27.18 / 36.22	24.92 / 38.48	26.1 / 35.6

N = Count of study means from control groups; NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Male and Female Organ Weights (Necropsy)

Sex: Male/Female	Species: Rat			Number of Studies/Control Groups: 59 / 64		
Study Type: OECD 421 / 422 / 443; CTA	Strain: Crl:CD(SD)			Range of Study Dates: 06/06 - 05/18		
Males	Mean	S.D.	N	Mean +/- 2 S.D.	Mean +/- 3 S.D.	Min / Max Value
Mean Age of Males at Necropsy (weeks)	15.2	1.43	45	12.34 / 18.06	10.91 / 19.49	13.0 / 21.0
Mean Seminal Vesicle/Coagulating Gland Weight (g)	2.01	0.283	8	1.444 / 2.576	1.161 / 2.859	1.69 / 2.44
Mean Prostate Weight (g)	1.02	0.084	12	0.852 / 1.188	0.768 / 1.272	0.88 / 1.18
Mean Right Testis Weight (g)	1.76	0.054	59	1.652 / 1.868	1.598 / 1.922	1.63 / 1.90
Mean Left Testis Weight (g)	1.76	0.063	64	1.634 / 1.886	1.571 / 1.949	1.63 / 1.96
Mean Right Epididymis Weight (g)	0.64	0.036	59	0.568 / 0.712	0.532 / 0.748	0.58 / 0.77
Mean Left Epididymis Weight (g)	0.62	0.033	59	0.554 / 0.686	0.521 / 0.719	0.57 / 0.76
Mean Right Cauda Epididymis Weight (g)	0.3397	0.13325	8	0.07320 / 0.60620	-0.06005 / 0.73945	0.2536 / 0.6600
Mean Left Cauda Epididymis Weight (g)	0.2952	0.03314	12	0.22892 / 0.36148	0.19578 / 0.39462	0.2525 / 0.3675
Females						
Mean Age of Females at Necropsy (weeks)	18.1	1.11	45	15.88 / 20.32	14.77 / 21.43	16.0 / 21.0
Mean Combined Ovary/Oviduct Weight (g)	0.1402	0.01688	58	0.10644 / 0.17396	0.08956 / 0.19084	0.0898 / 0.1660

N = Count of study means from control groups, NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Developmental Landmarks

Sex: Male/Female	Species: Rat	Number of Studies/Control Groups:	34 / 38			
Study Type: OECD 421 / 422 / 443; CTA	Strain: Crl:CD(SD)	Range of Study Dates:	09/11 - 05/18			
	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Male Anogenital Distance (PND1) (mm)	3.90	0.229	35	3.442 / 4.358	3.213 / 4.587	3.4 / 4.3
Mean Female Anogenital Distance (PND1) (mm)	2.06	0.192	35	1.676 / 2.444	1.484 / 2.636	1.7 / 2.5
Mean Day of Balanopreputial Separation	44.2	1.21	7	41.78 / 46.62	40.57 / 47.83	42.5 / 45.8
Mean Body Weight at Aquisition (g)	233.6	18.25	7	197.10 / 270.10	178.85 / 288.35	210.3 / 260.6
Mean Day of Vaginal Patency	33.4	0.57	7	32.26 / 34.54	31.69 / 35.11	32.7 / 34.2
Mean Body Weight at Aquisition (g)	118.0	6.07	7	105.86 / 130.14	99.79 / 136.21	113.2 / 130.5
Mean Areolae / Nipple Anlagen						
Males	0.00	0.000	31	0.00 / 0.00	0.00 / 0.00	0.0 / 0.0

N = Count of study means from control groups, NA = Not applicable

Reproductive Data for Crl:CD(SD) Rats
 OECD 421 / 422 / 443; CTA

ASH_RS_RE-O_2019.01
 25 Jan 2019

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Sperm Morphology

Sex: Male	Species: Rat			Number of Studies/Control Groups: 11 / 16							
Study Type: OECD 421 / 422 / 443; CTA	Strain: Crl:CD(SD)			Range of Study Dates: 06/06 - 05/18							
Sperm Morphology Differential Count (%)	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>			<u>Mean +/- 3 S.D.</u>			<u>Min / Max Value</u>	
Normal	99.4	0.52	15	98.36	/	100.00	97.84	/	100.00	97.7	/ 99.9
Normal Head Separated from Flagellum	0.3	0.19	15	0.00	/	0.68	0.00	/	0.87	0.0	/ 0.7
Head Absent w/ Normal Flagellum	0.3	0.40	15	0.00	/	1.10	0.00	/	1.50	0.0	/ 1.7
Head Absent w/ Abnormal Flagellum	0.0	0.00	12	0.00	/	0.00	0.00	/	0.00	0.0	/ 0.0
Misshapen Head w/ Normal Flagellum	0.0	0.00	15	0.00	/	0.00	0.00	/	0.00	0.0	/ 0.0
Misshapen Head w/ Abnormal Flagellum	0.0	0.00	11	0.00	/	0.00	0.00	/	0.00	0.0	/ 0.0
Degenerative Flagellar Defects w/ Normal Head	0.0	0.00	10	0.00	/	0.00	0.00	/	0.00	0.0	/ 0.0
Other Flagellar Defects w/ Normal Head	0.0	0.00	15	0.00	/	0.00	0.00	/	0.00	0.0	/ 0.0

N = Count of study means from control groups, NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Sperm Concentration (IVOS v. 14)

Sex: Male	Species: Rat			Number of Studies/Control Groups: 7 / 12		
Study Type: OECD 421 / 422 / 443; CTA	Strain: Crl:CD(SD)			Range of Study Dates: 10/13 - 05/18		
	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>Mean +/- 2 S.D.</u>	<u>Mean +/- 3 S.D.</u>	<u>Min / Max Value</u>
Mean Sperm Concentration (millions/ gram of tissue)						
Left Testis	113.5	11.81	12	89.88 / 137.12	78.07 / 148.93	96.6 / 131.4
Left Epididymis	NA	NA	0	NA / NA	NA / NA	NA / NA
Left Cauda Epididymis	720.5	62.73	12	595.04 / 845.96	532.31 / 908.69	632.3 / 815.8
Mean Sperm Production Rate (millions/ gram of tissue/ day)	18.6	1.94	12	14.72 / 22.48	12.78 / 24.42	15.8 / 21.5
Mean Sperm Motility (%)	83.3	4.25	12	74.80 / 91.80	70.55 / 96.05	75.0 / 88.0
Mean Progressive Sperm Motility (%)	66.4	6.92	12	52.56 / 80.24	45.64 / 87.16	57.0 / 75.0

N = Count of study means from control groups, NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Thyroid Hormones

Sex: Male/Female			Species: Rat			Number of Studies/Control Groups: 32 / 38	
Study Type: OECD 421 / 422 / 443; CTA			Strain: Crl:CD(SD)			Range of Study Dates: 05/14 - 05/18	
Total T3					UHPLC/MS/MS (pg/mL)		
Males	Mean	S.D.	Study N	Animal N	Mean +/- 2 S.D.	Mean +/- 3 S.D.	Min / Max Value
Adult - F0	490.0	96.2	2	20	297.7 / 682.3	201.5 / 778.5	422.0 / 558.0
Adult - F1	596.5	89.8	2	20	416.9 / 776.1	327.1 / 865.9	533.0 / 660.0
Pup - PND 21-28	997.0	24.0	2	20	948.9 / 1,045.1	924.9 / 1,069.1	980.0 / 1014.0
Females	Mean	S.D.	Study N	Animal N	Mean +/- 2 S.D.	Mean +/- 3 S.D.	Min / Max Value
Adult - F0	615.5	159.1	2	20	297.3 / 933.7	138.2 / 1,092.8	503.0 / 728.0
Adult - F1	714.5	161.9	2	20	390.6 / 1,038.4	228.7 / 1,200.3	600.0 / 829.0
Pup - PND 21-28	975.5	48.8	2	18	877.9 / 1,073.1	829.1 / 1,121.9	941.0 / 1010.0
Combined	Mean	S.D.	Study N	Animal N	Mean +/- 2 S.D.	Mean +/- 3 S.D.	Min / Max Value
Pup - PND 4	205.5	6.4	2	20	192.8 / 218.2	186.4 / 224.6	201.0 / 210.0

NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Thyroid Hormones

Sex: Male/Female		Species: Rat				Number of Studies/Control Groups: 32 / 38	
Study Type: OECD 421 / 422 / 443; CTA		Strain: Crl:CD(SD)				Range of Study Dates: 05/14 - 05/18	
Total T4					UHPLC/MS/MS (pg/mL)		
Males	Mean	S.D.	Study N	Animal N	Mean +/- 2 S.D.	Mean +/- 3 S.D.	Min / Max Value
Adult - F0	59,218.0	22,344.3	4	42	14,529.4 / 103,906.6	0.0 / 126,250.9	39010.0 / 97270.0
Adult - F1	63,545.0	20,838.4	2	20	21,868.1 / 105,221.9	1,029.7 / 126,060.3	48810.0 / 78280.0
Pup - PND 13	80,426.0	27,083.0	3	28	26,259.9 / 134,592.1	0.0 / 161,675.1	62688.0 / 111600.0
Pup - PND 21-28	66,525.0	42,716.3	2	20	0.0 / 151,957.6	0.0 / 194,674.0	36320.0 / 96730.0
Females	Mean	S.D.	Study N	Animal N	Mean +/- 2 S.D.	Mean +/- 3 S.D.	Min / Max Value
Adult - F0	31,306.7	4,637.6	3	28	22,031.4 / 40,581.9	17,393.8 / 45,219.5	27550.0 / 36490.0
Adult - F1	42,440.0	14,792.7	2	20	12,854.7 / 72,025.3	0.0 / 86,818.0	31980.0 / 52900.0
Pup - PND 13	80,627.7	27,501.4	3	28	25,624.9 / 135,630.5	0.0 / 163,131.9	64340.0 / 112380.0
Pup - PND 21-28	68,161.0	45,592.8	2	18	0.0 / 159,346.7	0.0 / 204,939.5	35922.0 / 100400.0
Combined	Mean	S.D.	Study N	Animal N	Mean +/- 2 S.D.	Mean +/- 3 S.D.	Min / Max Value
Pup - PND 4	23,058.3	1,425.8	3	28	20,206.8 / 25,909.9	18,781.0 / 27,335.7	21580.0 / 24425.0

NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Thyroid Hormones

Sex: Male/Female			Species: Rat			Number of Studies/Control Groups: 32 / 38	
Study Type: OECD 421 / 422 / 443; CTA			Strain: Crl:CD(SD)			Range of Study Dates: 05/14 - 05/18	
TSH					Radioimmunoassay (RIA) (ng/mL)		
Males	Mean	S.D.	Study N	Animal N	Mean +/- 2 S.D.	Mean +/- 3 S.D.	Min / Max Value
Adult - F0	11.7	3.7	5	55	4.3 / 19.2	0.5 / 22.9	7.0 / 15.6
Adult - F1	10.2	4.1	5	55	2.1 / 18.3	0.0 / 22.3	6.1 / 15.6
Pup - PND 21-28	5.0	2.5	6	72	0.0 / 9.9	0.0 / 12.4	1.4 / 8.6
Females	Mean	S.D.	Study N	Animal N	Mean +/- 2 S.D.	Mean +/- 3 S.D.	Min / Max Value
Adult - F0	6.1	1.9	4	40	2.3 / 9.8	0.4 / 11.7	4.6 / 8.6
Adult - F1	5.5	2.8	5	55	0.0 / 11.1	0.0 / 13.8	3.0 / 8.7
Adult - GD 20	2.9	NA	1	20	NA / NA	NA / NA	2.9 / 2.9
Adult - LD 21	2.7	NA	1	18	NA / NA	NA / NA	2.7 / 2.7
Pup - PND 21-28	4.5	2.3	6	72	0.0 / 9.1	0.0 / 11.4	1.2 / 7.4
Combined	Mean	S.D.	Study N	Animal N	Mean +/- 2 S.D.	Mean +/- 3 S.D.	Min / Max Value
Fetal - GD 20	1.9	NA	1	19	NA / NA	NA / NA	1.9 / 1.9
Pup - PND 4	4.0	2.8	5	55	0.0 / 9.6	0.0 / 12.5	0.8 / 8.5

NA = Not applicable

Charles River Ashland - Developmental and Reproductive Toxicology
Historical Control Summary of Thyroid Hormones

Sex: Male/Female		Species: Rat			Number of Studies/Control Groups: 32 / 38		
Study Type: OECD 421 / 422 / 443; CTA		Strain: Crl:CD(SD)			Range of Study Dates: 05/14 - 05/18		
Total T4					Electrochemiluminescence Immunoassay (ECLIA) (ug/dL)		
Males	Mean	S.D.	Study N	Animal N	Mean +/- 2 S.D.	Mean +/- 3 S.D.	Min / Max Value
Adult - F0	6.250	0.674	27	295	4.903 / 7.598	4.229 / 8.271	4.9 / 8.3
Adult - F1	6.843	1.171	3	35	4.502 / 9.185	3.331 / 10.355	5.7 / 8.0
Pup - PND 13	5.205	0.520	23	220	4.166 / 6.244	3.646 / 6.764	3.7 / 6.0
Pup - PND 21-28	4.693	0.351	4	51	3.990 / 5.395	3.639 / 5.746	4.3 / 5.2
Females	Mean	S.D.	Study N	Animal N	Mean +/- 2 S.D.	Mean +/- 3 S.D.	Min / Max Value
Adult - F0	4.420	0.407	3	30	3.606 / 5.234	3.199 / 5.641	4.2 / 4.9
Adult - F1	4.707	0.957	3	35	2.793 / 6.620	1.836 / 7.577	3.6 / 5.5
Adult - GD 20	2.500	NA	1	11	NA / NA	NA / NA	2.5 / 2.5
Adult - LD 21	3.820	NA	1	18	NA / NA	NA / NA	3.8 / 3.8
Pup - PND 13	5.215	0.454	23	216	4.307 / 6.123	3.853 / 6.577	3.6 / 6.0
Pup - PND 21-28	4.558	0.328	4	53	3.902 / 5.213	3.575 / 5.540	4.2 / 5.0
Combined	Mean	S.D.	Study N	Animal N	Mean +/- 2 S.D.	Mean +/- 3 S.D.	Min / Max Value
Pup - PND 4	1.780	0.122	4	45	1.536 / 2.024	1.414 / 2.146	1.7 / 1.9

NA = Not applicable

Embryo-Fetal Developmental Historical Control Data

Notes regarding this dataset:

Due to calculation and database constraints, the study count may differ for each data type. This also means that animal count may differ for each data type. All the data that is presented is acceptable for use.

In the Reproductive Data, the total number of viable fetuses may not match the sum of the male and female fetuses. Sometimes, the sex of a fetus is not able to be determined.

Study Date Range: 12/22/2008-4/29/2014

Endpoint	Total	Mean of Study Means					25th Quartile	75th Quartile
		Mean	S.D.	SEM	Median	Min	Max	
NO. OF DATASETS	11							
Total No. of Animals in the Control Group	245							
No. of Animals That Died	0							
No. of Animals That Aborted	0							
No. of Animals That Delivered	0							
Percent Pregnant		95.21	4.748	1.432	96.00	87.50	100.00	100.00
No. Gravid	232							
No. With Only Resorptions	0							
No. of Dams With Live Fetuses	232							
No. Nongravid	13							
No. Nongravid That Died	0							
No. of Animals Examined at Laparohysterectomy	245							
Mean Gravid Uterine Weight (g)		78.39	8.215	2.477	76.25	68.72	95.35	83.91
Mean No. Viable Fetuses/Dam		11.40	1.251	0.377	11.14	9.88	13.78	12.22
Total No. Viable Fetuses	2636							
Viable Fetuses (%/Litter)		95.42	2.022	0.610	96.35	91.59	97.99	94.23
Mean No. Postimplantation Loss/Dam		0.52	0.177	0.053	0.52	0.27	0.87	0.61
Total No. of Postimplantation Losses	124							
Postimplantation Loss (%/Litter)		4.58	2.022	0.610	3.65	2.01	8.41	3.22
Early Resorptions (%/Litter)		4.52	1.934	0.583	3.65	2.01	8.08	3.22
Late Resorptions (%/Litter)		0.06	0.130	0.039	0.00	0.00	0.33	0.00
Dead Fetuses (%/Litter)		0.00	0.000	0.000	0.00	0.00	0.00	0.00
Mean No. Implantations/Dam		11.92	1.272	0.384	11.55	10.57	14.65	10.98
Mean No. Corpora Lutea/Dam		13.52	0.949	0.286	13.41	12.67	15.91	12.85
Mean No. Preimplantation Loss/Dam		1.60	0.488	0.147	1.71	0.73	2.22	1.22
Total No. Preimplantation Losses	379							
Preimplantation Loss (%/Litter)		12.36	4.719	1.423	14.49	5.26	19.04	7.79
Total No. Male Fetuses	1271							
Total No. Female Fetuses	1365							
% Males/Litter		48.73	3.447	1.039	48.08	43.25	53.67	46.51
% Females/Litter		51.27	3.447	1.039	51.92	46.33	56.75	48.47
Mean Fetal Body Weight (g)		5.156	0.0654	0.0197	5.151	5.030	5.286	5.128
Mean Male Body Weight (g)		5.308	0.0910	0.0274	5.332	5.117	5.447	5.248
Mean Female Body Weight (g)		5.018	0.0631	0.0190	5.012	4.900	5.138	4.983

		Mean of Study Means								
NO. OF DATASETS		9								
Total No. of Fetuses/Litters Examined Externally		2082	186							
Total No. of Fetuses/Litters Examined Viscerally		2082	186							
Total No. of Fetuses/Litters Examined Skeletally		2082	186							
MALFORMATIONS (% Per Litter)		Mean	S.D.	N	SEM	Median	Min	Max	25th Quartile	75th Quartile
TOTAL EXTERNAL MALFORMATIONS		0.20	0.353	9	0.118	0.00	0.00	1.02	0.00	0.36
TOTAL VISCERAL MALFORMATIONS		0.08	0.154	9	0.051	0.00	0.00	0.36	0.00	0.00
TOTAL SKELETAL MALFORMATIONS		0.23	0.275	9	0.092	0.24	0.00	0.83	0.00	0.32
TOTAL MALFORMATIONS		0.47	0.467	9	0.156	0.36	0.00	1.34	0.00	0.73
EXTERNAL										
Carpal and/or Tarsal Flexure		0.04	0.107	9	0.036	0.00	0.00	0.32	0.00	0.00
Localized Fetal Edema		0.00	0.000	9	0.000	0.00	0.00	0.00	0.00	0.00
Mandibular Micrognathia		0.04	0.107	9	0.036	0.00	0.00	0.32	0.00	0.00
Microphthalmia and/or Anophthalmia		0.08	0.151	9	0.050	0.00	0.00	0.36	0.00	0.00
Omphalocele		0.09	0.182	9	0.061	0.00	0.00	0.44	0.00	0.00
Vertebral Agenesis		0.03	0.095	9	0.032	0.00	0.00	0.29	0.00	0.00
VISCERAL										
Aortic Arch- Retroesophageal		0.04	0.121	9	0.040	0.00	0.00	0.36	0.00	0.00
Aortic Arch- Right-Sided		0.00	0.000	9	0.000	0.00	0.00	0.00	0.00	0.00
Hydrocephaly		0.04	0.111	9	0.037	0.00	0.00	0.33	0.00	0.00
SKELETAL										
Costal Cartilage Anomaly		0.00	0.000	9	0.000	0.00	0.00	0.00	0.00	0.00
Limb Bone(s)- Bent		0.04	0.107	9	0.036	0.00	0.00	0.32	0.00	0.00
Rib Anomaly		0.00	0.000	9	0.000	0.00	0.00	0.00	0.00	0.00
Sternebra(e)- Malaligned (Severe)		0.00	0.000	9	0.000	0.00	0.00	0.00	0.00	0.00
Sternoschisis		0.12	0.277	9	0.092	0.00	0.00	0.83	0.00	0.00
Vertebral Anomaly with or without Associated Rib Anomaly		0.00	0.000	9	0.000	0.00	0.00	0.00	0.00	0.00
Vertebral Centra Anomaly		0.04	0.132	9	0.044	0.00	0.00	0.40	0.00	0.00

		Mean of Study Means								
NO. OF DATASETS		9								
Total No. of Fetuses/Litters Examined Externally		2082	186							
Total No. of Fetuses/Litters Examined Viscerally		2082	186							
Total No. of Fetuses/Litters Examined Skeletally		2082	186							
VARIATIONS (% Per Litter)		Mean	S.D.	N	SEM	Median	Min	Max	25th Quartile	75th Quartile
TOTAL EXTERNAL VARIATIONS		0.00	0.000	9	0.000	0.00	0.00	0.00	0.00	0.00
TOTAL VISCERAL VARIATIONS		0.75	0.782	9	0.261	0.60	0.00	1.96	0.00	1.29
TOTAL SKELETAL VARIATIONS		62.88	5.067	9	1.689	64.69	55.41	69.41	57.35	65.77
TOTAL VARIATIONS		63.11	5.053	9	1.684	64.98	55.98	69.41	57.35	66.25
VISCERAL										
Blood Vessel(s), Major- Variation		0.04	0.111	9	0.037	0.00	0.00	0.33	0.00	0.00
Liver- Accessory Lobule(s)		0.45	0.501	9	0.167	0.32	0.00	1.14	0.00	1.00
Liver- Pale		0.03	0.081	9	0.027	0.00	0.00	0.24	0.00	0.00
Lung(s)- Small		0.00	0.000	9	0.000	0.00	0.00	0.00	0.00	0.00
Renal Papilla(e) not Developed and/or Distended Ureter(s)		0.19	0.315	9	0.105	0.00	0.00	0.83	0.00	0.29
Spleen- Accessory		0.05	0.145	9	0.048	0.00	0.00	0.43	0.00	0.00
SKELETAL										
Extra Site of Ossification- Sternebra(e)		0.04	0.107	9	0.036	0.00	0.00	0.32	0.00	0.00
Reduced Ossification- 13th Rib(s)		0.13	0.379	9	0.126	0.00	0.00	1.14	0.00	0.00
Reduced Ossification- Skull		0.66	0.954	9	0.318	0.00	0.00	2.60	0.00	0.83
Rib(s)- 14th Full		2.57	1.469	9	0.490	2.09	0.85	5.36	1.74	3.14
Rib(s)- 14th Rudimentary		53.38	4.908	9	1.636	51.94	45.43	60.96	50.99	56.45
Rib(s)- 7th Cervical		6.60	1.954	9	0.651	6.67	4.74	10.65	5.03	7.48
Rib(s)- Bent		6.00	4.101	9	1.367	5.14	1.37	12.73	2.72	7.01
Scapula(e)- Bent		0.00	0.000	9	0.000	0.00	0.00	0.00	0.00	0.00
Skull Bone(s)- Accessory		0.08	0.160	9	0.053	0.00	0.00	0.38	0.00	0.00
Sternebra(e) #5 and/or #6- Unossified		0.12	0.237	9	0.079	0.00	0.00	0.62	0.00	0.00
Sternebra(e)- 7th		0.16	0.272	9	0.091	0.00	0.00	0.77	0.00	0.33
Sternebra(e)- Malaligned (Slight or Moderate)		1.72	2.146	9	0.715	1.04	0.00	7.11	0.73	1.54
Vertebra(e)- 27 Presacral		1.10	1.475	9	0.492	0.36	0.00	4.34	0.26	1.92
Vertebral Centra not Fully Ossified		0.11	0.236	9	0.079	0.00	0.00	0.67	0.00	0.00

Modal Distribution of Fetal Body Weights

Number of Datasets in Historical Control	11
Range of Study Dates	12/22/2008 - 4/29/2014
Number of Dams with Fetal Body Weight Data	232
Dams with Fetal Body Weight Data with Live Fetuses	232
Mean Fetal Body Weight Range (g)	5.030 - 5.286

Mean Fetal Body Weight (g)	5.0	5.1	5.2	5.3	5.4
Total No. Datasets	0	1	5	4	1
Mean Litter Size	NA	12.048	11.368	11.499	10.545
Litter Size Range	NA - NA	12.05 - 12.05	10.22 - 12.64	9.88 - 13.78	10.55 - 10.55

Summary Incidence Malformations and Variations

(Total Number Fetuses/Litters Affected)

Ranked Uppermost to Nethermost

NO. OF DATASETS**9**

Total No. of Fetuses/Litters Examined Externally	2082	186
Total No. of Fetuses/Litters Examined Viscerally	2082	186
Total No. of Fetuses/Litters Examined Skeletally	2082	186

MALFORMATIONS	Number	
	Fetuses	Litters
EXTERNAL		
Microphthalmia and/or Anophthalmia	2	2
Omphalocele	2	2
Carpal and/or Tarsal Flexure	1	1
Mandibular Micrognathia	1	1
Vertebral Agenesis	1	1
VISCERAL		
Aortic Arch- Retroesophageal	1	1
Hydrocephaly	1	1
SKELETAL		
Sternoschisis	2	2
Limb Bone(s)- Bent	1	1
Vertebral Centra Anomaly	1	1

Summary Incidence Malformations and Variations

(Total Number Fetuses/Litters Affected)

Ranked Uppermost to Nethermost

NO. OF DATASETS**9**

Total No. of Fetuses/Litters Examined Externally	2082	186
Total No. of Fetuses/Litters Examined Viscerally	2082	186
Total No. of Fetuses/Litters Examined Skeletally	2082	186

VARIATIONS	Number	
	Fetuses	Litters
VISCERAL		
Liver- Accessory Lobule(s)	9	5
Renal Papilla(e) not Developed and/or Distended Ureter(s)	4	3
Blood Vessel(s), Major- Variation	1	1
Liver- Pale	1	1
Spleen- Accessory	1	1
SKELETAL		
Rib(s)- 14th Rudimentary	1107	180
Rib(s)- 7th Cervical	141	75
Rib(s)- Bent	110	46
Rib(s)- 14th Full	51	33
Sternebra(e)- Malaligned (Slight or Moderate)	29	21
Vertebra(e)- 27 Presacral	24	15
Reduced Ossification- Skull	11	6
Sternebra(e)- 7th	4	4
Vertebral Centra not Fully Ossified	3	2
Skull Bone(s)- Accessory	2	2
Sternebra(e) #5 and/or #6- Unossified	2	2
Extra Site of Ossification- Sternebra(e)	1	1
Reduced Ossification- 13th Rib(s)	1	1